Installation Manual
for the
Regional Center System

Revision F

19 July 1999

Prepared for:
Space and Naval Warfare Command
METOC Systems Program Office
(SPAWAR PMW-185)

Prepared by:

Fleet Numerical Meteorology and Oceanography Center
Monterey, CA

and

Integrated Performance Decisions, Inc.
Monterey, CA

Table of Contents

List of Figures

List of Tables

This page intentionally left blank.

1 SCOPE

1.1 IDENTIFICATION

This Installation Manual describes the procedures for setting up the hardware and software environment for the Regional Center system.

1.2 SYSTEM OVERVIEW

The Regional Center System consists of seven Sun Enterprise 250 computers, five of which are connected to the Unclassified (but Sensitive) Internet Protocol Routing Network (NIPRNET). The other two machines are connected to the Secure Internet Protocol Routing Network (SIPRNET). A more detailed overview of the system is contained in Section 3 of this document.

1.3 DOCUMENT OVERVIEW

The remainder of this document is divided into the following sections:

Section 2	Provides a list of referenced documents and other documents which provide useful information about the Regional Center system.
Section 3	Gives an overview of the system components and connections.
Section 4	Provides instructions for initial setup of the system hardware, and information concerning interconnection of the Regional Center system components and connections to external systems.
Section 5	Provides instructions for installation of the operating system and other software components on each of the computers of the system.
Section 6	Provides applicable notes, including a glossary of acronyms used in this document and a checklist for entering the IP addresses of system components..

This page intentionally left blank.

2 REFERENCED DOCUMENTS

Sun Microsystems Computer Company, Palo Alto, CA

Sun™ Enterprise 250 Server Owner's Guide, Revision A, June 1998

Sun™ Enterprise 250 Server Hardware Setup Instructions, Revision A, May 1998

M64 Installation Guide, Revision A, February 1997 (Frame Buffer Card)

Sun™ Quad FastEthernet PCI Adapter Installation and User's Guide, Revision A, July 1997

SunSwift™ PCI Adapter Installation and User's Guide, Revision A, August 1997 (SCSI/Ethernet Card)

12-24 Gbyte 4mm DDS-3 Tape Drive Installation and User's Guide, Revision A, April 1997

Inline Corporation, Chantilly, VA

MORSTOR-e™ Enterprise Storage Ultra SCSI RAID User Manual, Revision 1.0, August, 1998

Alteon Networks, San Jose, CA

ACEswitch™ 180 10/100/1000 Mbps Ethernet Server Switch Installation and User's Guide, Revision A, February 1998

ACEswitch™ ACElerate Software User's Guide, Release 5, Revision A, October 1998

Veritas Software, Mountain View, CA

Veritas® Volume Manager™ User’s Guide, Release 2.5 for Solaris, November, 1997

Veritas® FirstWatch® Agent for Informix® On-Line Dynamic Server™ Installation and Configuration Guide, Release 1.0 for Solaris, March 1997

Veritas® FirstWatch® Web Agent Installation and Configuration Guide

Informix Software, Inc, Menlo Park, CA

Informix Enterprise Command Center Installation Guide, Version 3.0, March 1998

Informix® Client Products Installation Guide for UNIX, Version 2.01, December 1997

This page intentionally left blank.

3 OVERVIEW OF THE REGIONAL CENTER SYSTEM

The Regional Center system consists of seven Sun Enterprise 250 servers, four on the NIPRNET side, one firewall, and two on the SIPRNET side. Two of the NIPRNET machines are database servers and two are web servers. On the SIPRNET side, both machines do dual duty as database and web servers.

The machines have been given standardized names which regional centers are requested to use in the interest of facilitating remote maintenance and troubleshooting. They are:

NIPRNET:

Database Servers	Web Servers	Firewall
Web Server #1, Web Server #2	Database Server #1, Database Server #2	Firewall

SIPRNET:

Database and Web Servers: SDBW #1, SDBW #2

The following software will be installed:

Database Servers	NIPRNET Web Servers	SIPRNET Web Servers	Firewall
Solaris 2.6 and patches	Solaris 2.6 and patches	Solaris 2.6 and patches	Solaris 2.6 and patches
Veritas: Volume Manager FirstWatch FirstWatch Agent for Informix	Veritas: Volume Manager	Veritas: Volume Manager FirstWatch FirstWatch Web Agent FirstWatch Agent for Informix	Raptor
Informix	Apache Web Server	Apache Web Server	Netscape 4.5
RC cdrom dated 12jul99	Netscape 4.5	Informix	Adobe Acrobat Reader
Netscape 4.5	Informix	RC cdrom dated 12jul99	
Adobe Acrobat Reader	RC cdrom dated 12jul99	MTIS	
Metcast Software	Adobe Acrobat Reader	Netscape 4.5	
Apache Web Server	PingAgent	Adobe Acrobat Reader	

One monitor and keyboard set is provided on the SIPRNET side and one on the NIPRNET side. The monitors and keyboards are connected through switches that allow each set to be used for multiple machines — a simple keystroke combination is used to switch between machines. A distinctive desktop background is used on each machine to facilitate recognition of the machine being monitored.

This page intentionally left blank.

4 HARDWARE SETUP

4.1 INSTALLING THE CPUS AND CARDS

The systems initially have only memory (256 MB of RAM in 4 DIMMs), an Ethernet port, and one 9-MB disk drive installed. To complete the system setup, a second 9-MB disk drive, two Central Processor Unit (CPU) modules and three PCI cards must be installed in each system (except the firewall system, which gets only one CPU and two expansion cards). The cards are:

1. A quadruple port Fast Ethernet Adapter, with 4 Fast Ethernet ports,

2. A PGX Color Frame Buffer (M64) card, and

3. A SunSwift™ SCSI PCI Adapter card (on the database machines (Database Server #1, Database Server #2, SDBW #1, and SDBW #2) only).

To install the CPUs and PCI cards, first remove the left side panel of the machine. This exposes the CPU card cage and PCI card slots, whose locations are shown in the figure below. Attach an antistatic wrist strap to your wrist and to a metal surface inside the system chassis.

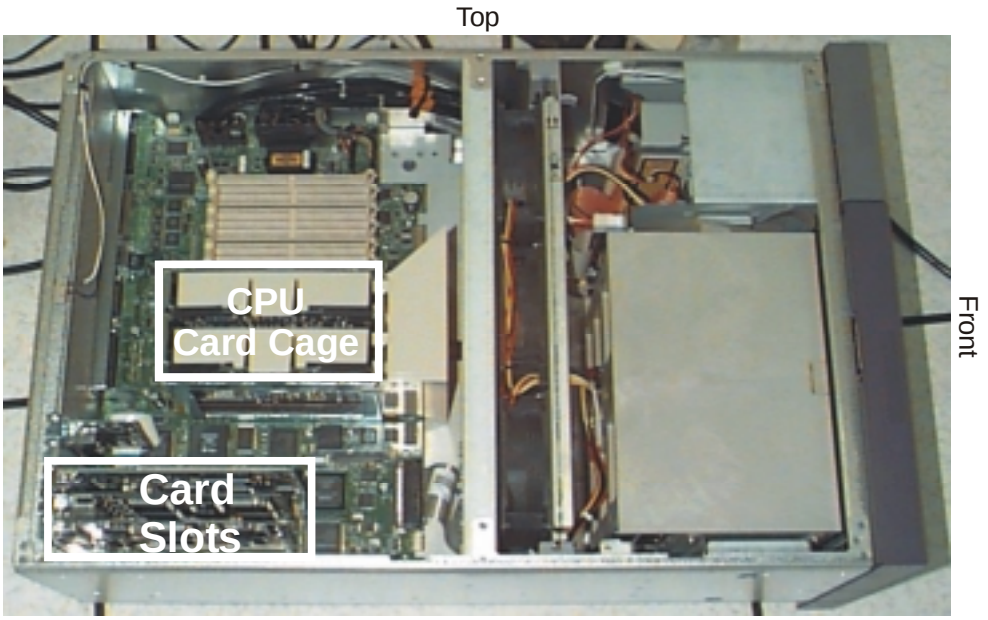


Figure 1. Locations of Card Slots and CPU Card Cage

To install a CPU module:

1. In the CPU card cage, locate the slot for the CPU module that you are installing.

2. Align the edges of the CPU module board with the grooves in the CPU card cage, and ensure that the ejection levers are open.

3. Slide the CPU module evenly into the grooves in the CPU card cage. Push until the CPU module board meets the connector at the back of the CPU card cage.

The PCI cards should be installed as follows:

Slot Number	Card	Notes
0	100 Base T Fast/Wide Ultra SCSI PCI Adapter	On database machines only
1	Quad Fast Ethernet Adapter	
2	PGX Color Frame Buffer	
3	None	Slot left empty

Figure 2 below gives a detailed view of the card installation for a database machine.

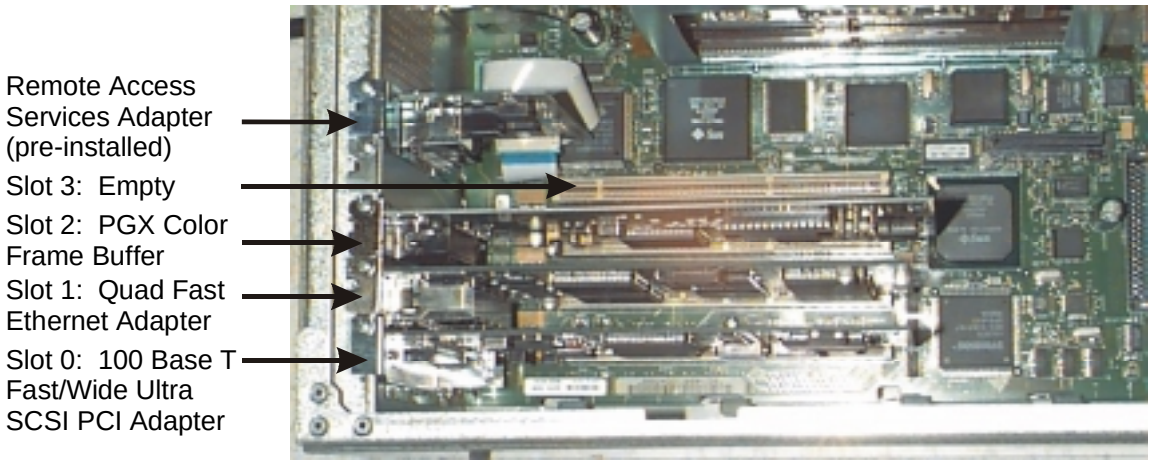


Figure 2. Details of Card Slots Showing Cards for Database Machine

To install a card, first remove the screw holding the blank metal piece that covers the card slot hole at the rear of the machine and remove the metal piece. Retain the screw for use in securing the card. Remove the card from its box and packaging. Hold the card with the metal tab facing the rear of the machine and the gold connectors facing downward. Insert the card carefully in the slot -- there are dividers in the slot that only allow the card to go in one way. When the card is properly aligned, press it firmly down into the slot (this may require some rocking from end to end). When the card is fully seated in the slot, insert the screw through the hole in the metal tab and tighten it. It is recommended that you not tighten the screws all the way down until

after all cards are seated -- you may find that the tab on one card makes it difficult to seat the card next to it unless you leave a little play. See the figure below.

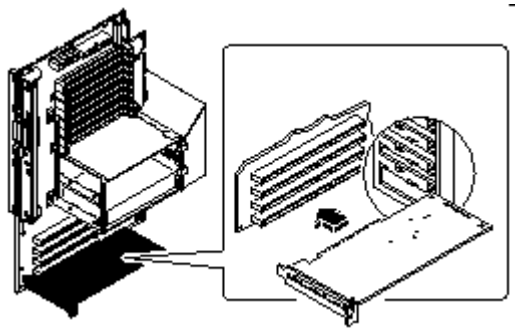


Figure 3. Inserting a PCI Card

4.2 INSTALLING THE SECOND DISK DRIVE

This section provides instructions for installing a second 9-GB disk drive in the machine's drive bay. These instructions apply to all machines except the Firewall. For further information, consult the *Sun Enterprise 250 Server Owner's Guide*, Page 110.

The steps to install the disk drive are:

1. Ensure that the system is halted and system power is off.

2. Unlock the disk access door and swing it open.

3. Attach an antistatic wrist strap to your wrist and to a metal surface inside the system chassis.

4. Release the drive handle on the disk drive, using your thumb and forefinger to pinch the drive latch sideways.

5. Align the disk drive to its disk bay. The drive should be installed in the rightmost slot in the lower disk bay. Orient the drive so the drive handle's hinge faces the bottom of the drive bay.

6. Holding the drive by its handle, fit it into the guide rails at the top and bottom of the drive bay.

7. Slide the drive into the bay until it barely contacts the backplate.

8. Press carefully on the center of the drive and watch as the handle begins to close.

9. Press the handle toward the drive until the latch closes, securing the drive.

10. Close the disk access door and lock it if necessary.

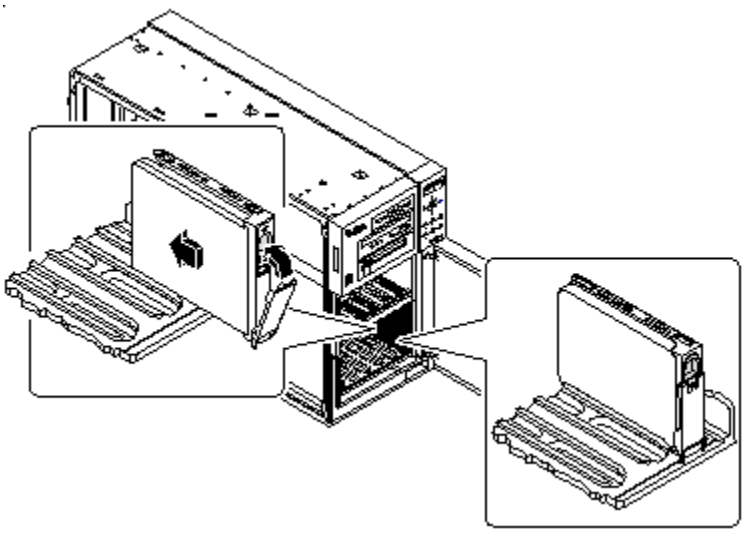


Figure 4. Installing a Drive in the Drive Bay

4.3 INSTALLING THE SPARE POWER SUPPLY

The spare power supply is installed in the second power supply bay, outlined in the figure below. To install the power supply, remove the cover over the empty bay by removing the two thumbscrews holding it in place. Insert the new power supply into the bay in the same orientation as the existing power supply and push it in until it seats. Tighten the two thumb screws to hold it in place.

Figure 5. Rear of Machine Showing Second Power Supply Bay

4.4 INSTALLING A TAPE DRIVE

Two machines (Database Server #2 and SDBW #2) require digital data storage (DDS-3) tape drives. To install a tape drive:

1. Ensure that the system is halted and system power is off.

2. Set the SCSI ID on the tape drive to 4. If the drive has a SCSI ID switch on the back, just ensure that the switch is set to 4. If there is no switch, find the jumper panel at the back of the drive. This is a small inset with 9 pins, one of which is separated from the others, and a small jumper used to connect two of the pins. For SCSI ID 4, the jumper should be set as shown below.

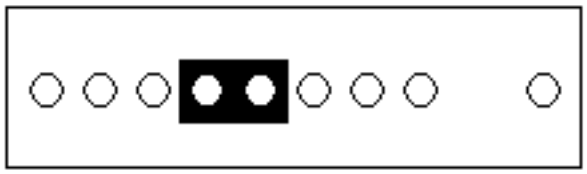


Figure 6. SCSI ID Jumper Settings for Tape Drive

3. Disconnect the removable media power cable from the UltraSCSI backplane at connector J0104. NOTE: The picture below also shows removal of a diskette power cable which is not present in these systems.

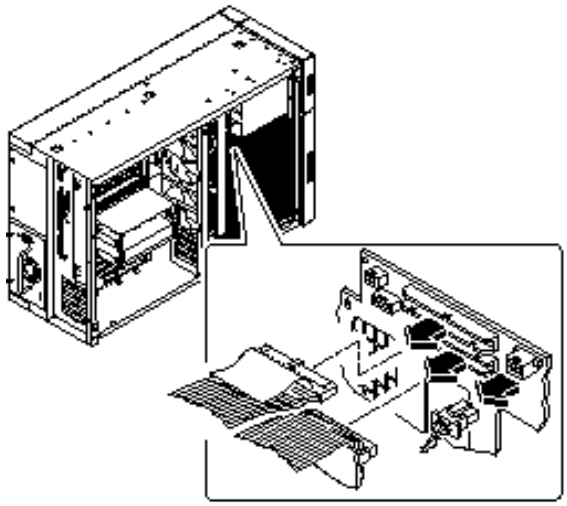


Figure 7. Disconnecting Removable Media Cables

4. Disconnect the removable media SCSI cable from the top of the UltraSCSI backplane at connector J0501. Leave all other cabling connected to the rear of the drives in the removable media assembly.

5. At the front of the system, pull the plastic cover off the front of the removable media assembly. Grasp the cover on both sides and pull it away from the front of the system.

6. Loosen the two captive Phillips screws securing the removable media assembly to the chassis.

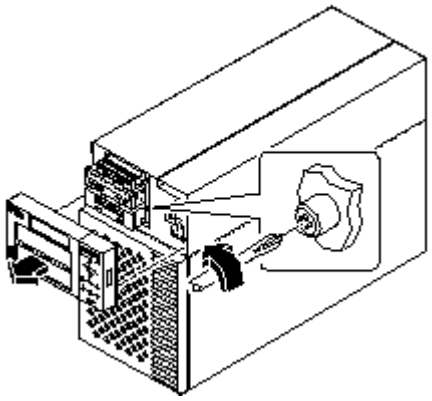


Figure 8. Loosening the Removable Media Assembly Holding Screws

7. Slide the removable media assembly out of the system chassis. Be sure that you feed all the cables carefully out of the RMA chassis opening as you remove the assembly.

8. Place the assembly on an antistatic mat.

9. If necessary, remove the metal filler panel from the appropriate drive bay in the removable media assembly. To release the panel, deflect its two retainer tabs through the small rectangular slots on each side of the RMA enclosure.

10. If necessary, remove the plastic filler panel from the RMA plastic cover. On the back side of the RMA cover, push the filler panel retainer tabs inward to disengage the filler panel.

11. Slide the tape drive into its bay. Align the two screw holes on each side of the drive with the corresponding holes in each side of the drive bay.

12. Insert and tighten the four flat-head Phillips screws that secure the drive in its bay. There are two screws on each side of the drive.

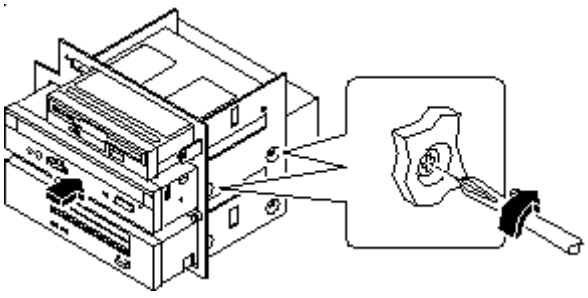


Figure 9. Tightening the Tape Drive Holding Screws

13. Connect the SCSI data and power cables to their corresponding connectors at the rear of the drive.

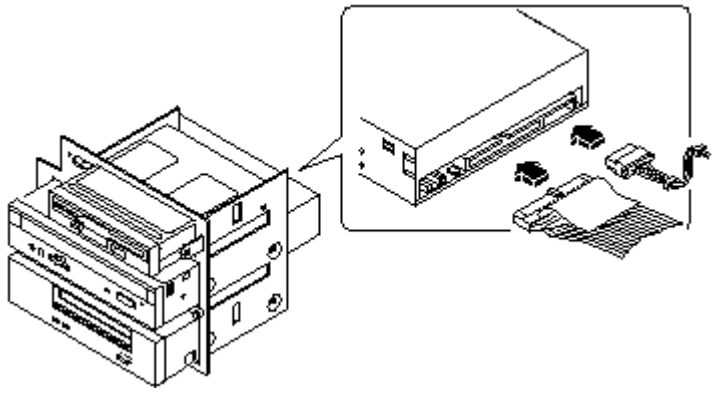


Figure 10. Connecting the SCSI Data and Power Cables to the Tape Drive

14. Grasp any cables attached to the rear of the removable media devices and feed them into the RMA opening at the front of the chassis.

15. Slide the removable media assembly into the system chassis.

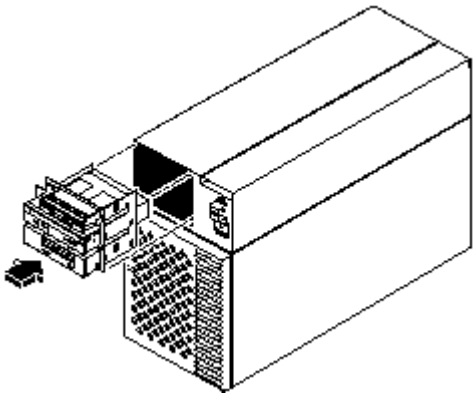


Figure 11. Sliding the Removable Media Assembly Into the System Chassis

16. Tighten the two captive Phillips screws securing the removable media assembly to the system chassis.

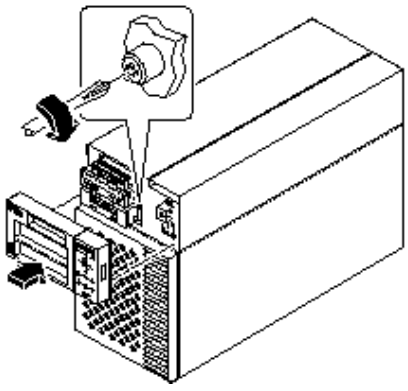


Figure 12. Tightening the Removable Media Assembly Holding Screws

17. Replace the RMA plastic cover. Align the two posts on the cover with the corresponding holes at the front of the chassis and press the cover evenly on both sides until it snaps into place.

4.5 INSTALLING THE RAID ARRAYS

Before hooking up the RAID arrays, edit the file /kernel/drv/sd.conf and add the following lines:

```
name="sd" class="scsi"
     target=3 lun=0;
```

Then copy these lines 15 times and change them so that the number following lun= ranges from 1 to 15 (that is, the first copy gets lun=1, the next copy gets lun=2, and so forth through lun=15.

To install the RAID arrays:

1. Attach dual-SCSI adapters to the SE CHAN 2 and SE CHAN 3 ports on the back of the unterminated expansion chassis.

2. Connect expansion cables (2-foot high-density cables) between the CHAN 2 OUT port of the command module and one side of the dual-SCSI adapter on the SE CHAN 2 port of the unterminated expansion chassis. Connect expansion cables between the CHAN 3 OUT port of the command module and one side of the dual-SCSI adapter on the SE CHAN 3 port of the unterminated expansion chassis.

3. Connect expansion cables between the unused port of the dual-SCSI adapter on the SE CHAN 2 port of the unterminated expansion chassis and the SE CHAN 2 port of the terminated expansion chassis. Connect expansion cables between the unused port of the dual-SCSI adapter on the SE CHAN 3 port of the unterminated expansion chassis and the SE CHAN 3 port of the terminated expansion chassis.

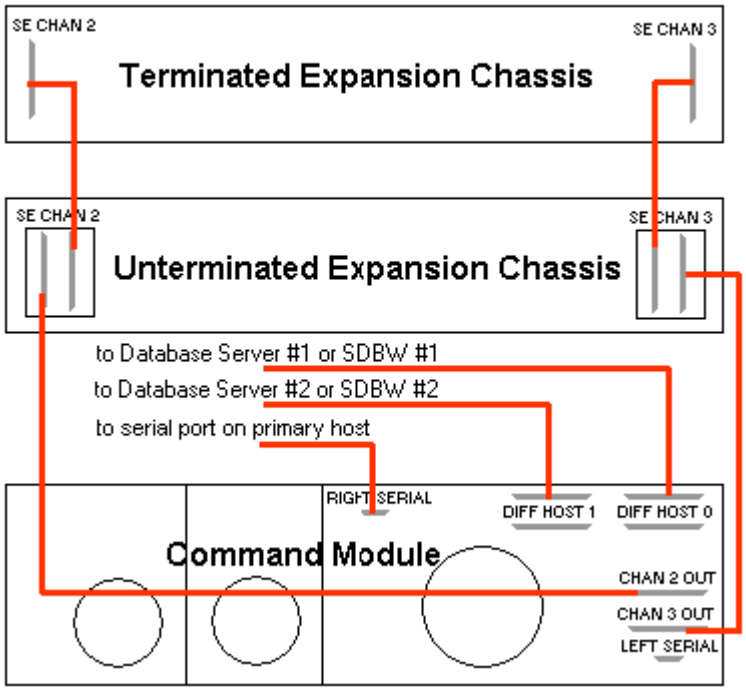


Figure 13. RAID Array Connections

4. Ensure that the RAID array and host computers are powered down before proceeding further.

5. Connect a host cable (6-foot 68-pin high-density SCSI cable) between the upper DIFF HOST 1 port of the command module to the Fast/Wide Ultra SCSI PCI adapter in slot 0 on the primary host (Database Server #2 or SDBW #2). Install a terminator on the other DIFF HOST 1 port.

6. Connect a host cable (6-foot 68-pin high-density SCSI cable) between the upper DIFF HOST 0 port of the command module to the Fast/Wide Ultra SCSI PCI adapter in slot 0 on the secondary host (Database Server #1 or SDBW #1). Install a terminator on the other DIFF HOST 1 port.

7. Connect a serial cable from the RIGHT SERIAL port on the command module to a serial port on the primary host.

8. Power on the expansion chassis (switches on front) and then the two main switches on the back of the command module.

9. After the RAID has completed its Power On Self-Test (typically about 30 seconds), power on the servers.

4.6 CONFIGURING THE ALTEON SWITCHES

The Alteon switches should be configured before installation. To perform these operations, you will need the User's Guide for the ACElerate Software, Release 5, referenced in Section 2.2. **NOTE:** In the discussion that follows, <Enter> represents the Enter or Return key on the keyboard. Items you type in are shown `in Courier type`.

4.6.1 Setup Sequence

The following sequence must be followed when setting up the switches:

1. Turn Alteon #2 off. Turn Alteon # 1 on and configure it following the steps in Sections 4.6.2 through 4.6.5. Initially, leave all SLB ports disabled. When configuration is completed, type `apply <Enter>` to apply the changes and `save <Enter>` to save them.

2. Turn Alteon # 1 off. Turn Alteon # 2 on and configure it following the steps in Sections 4.6.2 through 4.6.4 (you don't need to set the filters in Sections 4.6.5). When configuration is completed, type `apply <Enter>` to apply the changes and `save <Enter>` to save them.

3. Turn Alteon # 2 off. Ensure that the Alteon switches are connected to one another and that there is a good connection to the network. Turn Alteon # 1 on, and enable ports 4 and 6 (at the terminal prompt for Alteon # 1, type `/cfg/slb/port 4 ena <Enter>` and `/cfg/slp/port 6 ena <Enter>`. Other ports should be enabled if and only if their corresponding servers are up and configured (otherwise the switches will sense that the servers are down keep trying to fail over back and forth). Type `apply <Enter>` to apply the new configuration and `save <Enter>` to save it. Let Alteon # 1 run for at least 5 minutes before turning on Alteon # 2.

4. Turn Alteon # 2 on. The filter settings should be transferred from Alteon #1 to Alteon #2, and after about 5 minutes the system should be settled out. At the terminal, typing `/info/slb <Enter>` should produce a display showing that Alteon #1 is the primary and Alteon #2 is the standby switch.

5. The remaining ports may be enabled when their respective servers are up and running by typing `/cfg/slb/port <port number> ena <Enter>`, where <port number> is the number of the port being configured. When finished, type `apply <Enter>` to apply the new configuration and `save <Enter>` to save it.

4.6.2 Basic Setup

The following steps perform the basic switch setup:

1. Connect a terminal to the Console port at the front of the switch.

2. Power on the switch and the terminal.

3. Press the <Enter> key on the terminal a few times to establish a connection. When the connection is made, you will be prompted for a password.

4. Enter the password admin. You will be asked if you would like to run "Set Up" to configure the switch.

5. Enter y <Enter>. The program asks whether you will be configuring VLANS.

6. Enter y <Enter>. The program prompts for the current month.

7. Enter the month (1 to 12), followed by <Enter>. The program prompts for the current day.

8. Enter the day of the month (1 to 31), followed by <Enter>. The program prompts for the year.

9. Enter the last 2 digits of the year (00 to 99), followed by <Enter>. An entry of 00 is interpreted as the year 2000. The program issues a "System clock set to " message and then prompts for the current hour.

10. Enter the current hour (GMT) in 24-hour format (00 to 23), followed by <Enter>. The program prompts for the current minutes.

11. Enter the current minutes (00 to 59), followed by <Enter>. The program prompts for seconds.

12. Enter the seconds of the current time (00 to 59), followed by <Enter>. The program displays a "System clock set to " message and then asks whether BOOTP should be enabled.

13. Enter d <Enter> (for disabled). The program then asks whether you want to turn Spanning Tree off.

14. Enter n <Enter>. The program then asks which port you want to configure.

15. `Enter 1 <Enter>`. The program then prompts for the speed of the Fast Link.

16. Enter `any <Enter>`. The program then prompts for the speed of the Port.

17. Enter `any <Enter>`. The program then asks for the port flow control setting.

18. Enter `both <Enter>`. The program then prompts for the auto-negotiation mode.

19. Enter `on <Enter>`. The program then asks for a new TAG flag.

20. Enter `0 <Enter>`. The program then prompts for the next port.

21. Repeat steps 15 through 20 for ports 2 through 9 (change the port number entered in step 15). When all ports are finished, press the `<Enter>` key without entering a port number. The program then proceeds to VLAN configuration and asks you to select the VLAN number to configure.

22. Enter `2 <Enter>`. The program then asks for the VLAN name.

23. Enter `VLAN 2 <Enter>`. The program then asks whether jumbo frame support shold be enabled.

24. Enter `d <Enter>` (for disabled). The program then promts for the VLAN port numbers. Enter the following numbers, each followed by the `<Enter>` key: `1`, `2`, and `6`. Press the `<Enter>` key without making an entry after entering the `6`. The program then prompts for the next VLAN to configure.

25. Press the `<Enter>` key to proceed. The program then proceeds to IP Configuration and prompts you for the IP Interface to configure. You will be configuring 3 IP interfaces.

26. Enter the interface number (`1`, `2`, or `3`), followed by `<Enter>`. The program requests that you enter the new IP address.

27. Enter the IP address of this interface. For Interface 1, this is the Primary IP address of the switch on VLAN 1. For Interface 2, enter the Secondary IP address of the switch on VLAN 1. For Interface 3, enter the address of the switch on VLAN 2. The IP address consists of four numbers separated by periods (e.g. 152.80.34.120). Press the `<Enter>` key after typing the numbers. After the address is entered, the program asks for the subnet mask.

28. Enter the subnet mask (e.g. `255.255.255.0`, site-dependent), followed by `<Enter>`. The program then requests the new broadcast IP address.

29. The broadcast IP address is the same as the IP address entered in Step 24 except for the last number, which is changed to 255 (e.g. 152.80.34.255). At some sites, the last two numbers may be changed to 255 (e.g. 152.80.255.255). Press the `<Enter>` key after entering all the numbers. You are then asked to specify a VLAN for the interface.

30. Enter `1` for IP interfaces 1 and 2, `2` for IP interface 3, followed by `<Enter>`. You are then asked whether to enable the IP interface.

31. Enter `y <Enter>`. The program then prompts for another IP interface to configure.

32. Repeat steps 26-31 for IP interfaces 2 and 3. When finished entering data for these interfaces, press the `<Enter>` key at the "Enter interface number" prompt to proceed without configuring another IP interface. The system then proceeds to the Default Gateway section and prompts for the default gateway number.

33. Enter `1 <Enter>`. The system then prompts for the IP address of the default gateway.

34. Enter the IP address of the hub connected to NIPRNET, followed by `<Enter>`. The program then asks whether you want to enable the default gateway.

35. Enter `y <Enter>`. The program then asks for a new gateway number to configure.

36. Press the `<Enter>` key to skip to the static route section. You are then asked whether you want to enable IP forwarding.

37. Enter `y <Enter>`. You are then asked for the IP address for the local route cache.

38. Press the `<Enter>` key to proceed. You are then asked for the route mask for the local route cache.

39. Press the `<Enter>` key to proceed. You are then asked whether to enable the RIP supply.

40. Enter `n <Enter>`. The program then proceeds to the final steps, and asks whether you would like to run from the top again.

41. Enter `n <Enter>`. The program then asks whether you want to review the changes made.

42. Enter `y <Enter>`. The program shows the changes and asks whether to apply them.

43. Enter `y <Enter>`. The program then asks whether you want to save the changes to flash.

44. Enter `y <Enter>`. This completes the initial setup, and returns you to the Main Menu.

4.6.3 Server Load Balancing Setup

1. Enter `/cfg/sys <Enter>`. This takes you to the System Configuration menu.

2. Enter `http enable <Enter>` to enable the HTTP interface.

3. Enter `idle 5 <Enter>` to set the idle time for command line sessions.

4. Enter `/cfg/slb <Enter>` to go to the Server Load Balancing options menu.

5. Enter `real 1 <Enter>` to configure information about real server 1.

6. Enter `rip`, a space, and the IP address of Web Server #1, followed by `<Enter>`.

7. Enter `wght 1 <Enter>` to set the server weight.

8. Enter `mcon 200000 <Enter>` to set the maximum number of connections.

9. Enter `bkup none <Enter>`.

10. Enter `tmout 10 <Enter>`.

11. Enter `intr 2 <Enter>`.

12. Enter `retry 4 <Enter>`.

13. Enter `restr 8 <Enter>`.

14. Enter `remot disabled <Enter>`.

15. Enter `ena <Enter>` to enable the server.

16. Enter `real 2 <Enter>` to configure information about real server 1.

17. Enter `rip`, a space, and the IP address of Web Server #2, followed by `<Enter>`.

18. Enter `wght 1 <Enter>` to set the server weight.

19. Enter `mcon 200000 <Enter>` to set the maximum number of connections.

20. Enter `bkup none <Enter>`.

21. Enter `tmout 10 <Enter>`.

22. Enter `intr 2 <Enter>`.

23. Enter `retry 4 <Enter>`.

24. Enter `restr 8 <Enter>`.

25. Enter `remot disabled <Enter>`.

26. Enter `ena <Enter>` to enable the server.

27. Enter `/cfg/slb/group 1 <Enter>` at the prompt to configure real server group 1.

28. Enter `metrc leastconns <Enter>` at the Real server group 1# prompt.

29. Enter `healt icmp <Enter>`.

30. Enter `bkup none <Enter>`.

31. Enter `add 1 <Enter>` to add real server 1 to the group.

32. Enter `add 2 <Enter>` to add real server 2 to the group.

33. Enter `cfg/slb/virt 1 <Enter>` at the prompt to configure virtual server 1.

34. At the Virtual server 1# prompt, enter `vip` and the IP address of the virtual server, followed by `<Enter>`.

35. Enter `layr3 <Enter>` dis to disable layer 3 only balancing.

36. Enter `ena <Enter>` to enable the virtual server.

37. Enter `add 80 1 <Enter>` to add virtual port 80 to real server group 1.

38. Enter `map 80 80 <Enter>` to map virtual port 80 to real port 80.

39. Enter `udp 80 dis <Enter>`.

40. Enter `pbind 80 dis <Enter>`.

4.6.4 SLB Port Configuration

The steps below are used to configure the Alteon SLB ports.

1. At the prompt, enter `/cfg/slb/port 4 <Enter>` to configure Port 4.

2. Enter `state client <Enter>`.

3. Enter `pip 0.0.0.0 <Enter>`.

4. Enter `/cfg/slb/port 6 <Enter>` to configure Port 6.

5. Enter `state failover <Enter>`.

6. Enter `pip 0.0.0.0 <Enter>`.

7. Enter `/cfg/slb/Port 7 <Enter>` to configure Port 7.

8. Enter `state server <Enter>`.

9. Enter `pip 0.0.0.0 <Enter>`.

10. Enter `/cfg/Port 8 <Enter>` to configure Port 8.

11. Enter `state server <Enter>`.

12. Enter `pip 0.0.0.0 <Enter>`.

13. Enter `/cfg/slb/fail <Enter>` to access the failover menu.

14. Enter `prima` followed by a space and the IP address of Alteon #1, followed by `<Enter>`.

15. Enter `secon` followed a space and the IP address of Alteon #2, followed by `<Enter>`.

16. Enter `resp 2 <Enter>`.

17. Enter `spply enabled <Enter>`.

18. Enter `on <Enter>`.

19. Enter `/cfg/slb <Enter>` to return to the Server Load Balancing menu.

20. Enter `on <Enter>`.

21. Enter `imask 255.255.255.255 <Enter>`.

22. Enter `mnet 0.0.0.0 <Enter>`.

23. Enter `mmask 255.255.255.255 <Enter>`.

4.6.5 Configuring the Filters

Table 4-1 on the next page shows the filter settings used for the Alteon switches. **Skip this section if you are configuring Alteon Switch #2.** Below the table are the steps used to set the filter settings for a single filter.

After configuring the filters, you must add them to the appropriate ports. The filters assigned to each port are shown below.

Port	Filters
1	15,17,21,51,224
2	15,17,21,51,224
3	
4	21,41,51,224
5	
6	
7	16,18,20,21,224
8	16,18,20,21,224

To add filters to a port:

Type `/cfg/slb/port <Port number> <Enter>`, where <Port number> is the number of the port to which the filters are to be added (e.g. 1). Then for each filter to be added, type `add <filter number> <Enter>`, where <filter number> is the number of the filter to be added. You can add multiple filters on one line by separating the add commands with a "/". For example, to add the filters shown above for Port 1, the sequence would be:

```
/cfg/slb/port 1 <Enter>
add 15/add 17/add 21/add 51/add 224 <Enter>
```

Table 4-1. Filter Settings for the Alteon Switches

Filter Num	SIP	SMASK	SNAME	DIP	DMASK	DNAME	PROTO	SPORT	DPORT	ENA	LOG	ACTION	PURPOSE
15		255.255.255.255	Web Server 2	10.1.0.0	255.255.0.0	DB Subnet	TCP	ANY	3926-3928	Y	N	ALLOW	Allow Web Server 2 to talk to DB Subnet for Metcast ONLY
16	10.1.0.0	255.255.0.0	DB Subnet		255.255.255.255	Web Server 2	TCP	3926-3928	ANY	Y	N	ALLOW	Allow DB Subnet to respond to web server 2
17		255.255.255.255	Web Server 1	10.1.0.0	255.255.0.0	DB Subnet	TCP	ANY	3926-3928	Y	N	ALLOW	Allow Web Server 1 to talk to DB Subnet for Metcast ONLY
18	10.1.0.0	255.255.0.0	DB Subnet		255.255.255.255	Web Server 1	TCP	3926-3928	ANY	Y	N	ALLOW	Allow DB Subnet to respond to web server 1
20	10.1.0.0	255.255.0.0	DB Subnet	10.1.0.0	255.255.0.0	DB Subnet	ANY	ANY	ANY	Y	N	ALLOW	Allow Local Traffic on internal network
21	0.0.0.0	0.0.0.0	Any	10.1.0.0	255.255.0.0	DB Subnet	ANY	ANY	ANY	Y	Y	DENY	Prevent outside traffic on internal network
41	0.0.0.0	0.0.0.0	Any		255.255.255.0	Local Subnet	ANY	ANY	ANY	Y	N	ALLOW	Allow All Traffic into Local Subnet
51		255.255.255.0	Local Subnet	0.0.0.0	0.0.0.0	Any	ANY	ANY	ANY	Y	N	ALLOW	Allow All Traffic out of Local Subnet
224	0.0.0.0	0.0.0.0	Any	0.0.0.0	0.0.0.0	Any	ANY	ANY	ANY	Y	Y	DENY	Deny anything not specifically allowed

To configure a filter:

1. Enter `/cfg/slb//filt` followed by a space and the filter number and `<Enter>` to begin configuring a filter. For example, you would enter `/cfg/slb/filt 15 <Enter>` to begin configuring Filter 15.

2. Enter `sip` followed by a space and the IP address in the SIP column, or the IP address of the component listed under SNAME in Table 4-1 for this filter, then `<Enter>`. The System Administrator can provide the IP addresses not listed in the SIP column of the table.

3. Enter `smask` followed by a space and the IP address listed in the SMASK column of Table 4-1 for this filter, then `<Enter>`.

4. Enter dip followed by a space and the IP address in the DIP column, or the IP address of the component listen under DNAME in Table 4-1 for this filter, then `<Enter>`. The System Administrator can provide the IP addresses not listed in the DIP column of the table.

5. Enter `dmask` followed by a space and the IP address listed in the DMASK column of Table 4-1 for this filter, then `<Enter>`.

6. Enter `proto` followed by a space and the contents of the PROTO column in Table 4-1 for this filter, then `<Enter>`.

7. Enter `sport` followed by a space and the contents of the SPORT column in Table 4-1 for this filter, then `<Enter>`.

8. Enter `dport` followed by a space and the contents of the DPORT column in Table 4-1 for this filter, then `<Enter>`.

9. Enter `log disabled <Enter>` if the LOG column in Table 4-1 for this filter contains N, or `log enabled <Enter>` if the log column contains Y.

10. Enter `actio` followed by a space and the contents of the ACTION column in Table 4-1 for this filter, followed by `<Enter>`.

11. Initially, leave all filters disabled.

4.6.6 Disable SNMP

a. Type the following command at the main menu prompt:

b. Type `/cfg/snmp/rcomm`

c. Rename the first Alteon Switch by typing in a new name.

d. Go back to the main menu.

e. Type `/cfg/snmp/wcomm` at the main menu prompt.

f. Rename the second Alteon Switch by typing in a new name.

g. Go back to the main menu.

h. Type `/cfg/snmp/trap1 0.0.0.0/t1com`

i. Type in the same name that you used for the first Alteon Switch.

j. Go back to the main menu.

k. Type `/cfg/snmp/trap2 0.0.0.0/t2com`

l. Type in the same name that you used for the second Alteon Switch.

m. Go back to the main menu.

n. Type `/cfg/snmp/linkt`

o. Disable port 1 (Repeat the above command eight times, ensuring that all eight ports are disabled).

.

4.7 CONNECTING THE SYSTEM

The diagrams below show the connections for the NIPRNET and SIPRNET circuits.

Physical Connection Drawing for RC Equipment

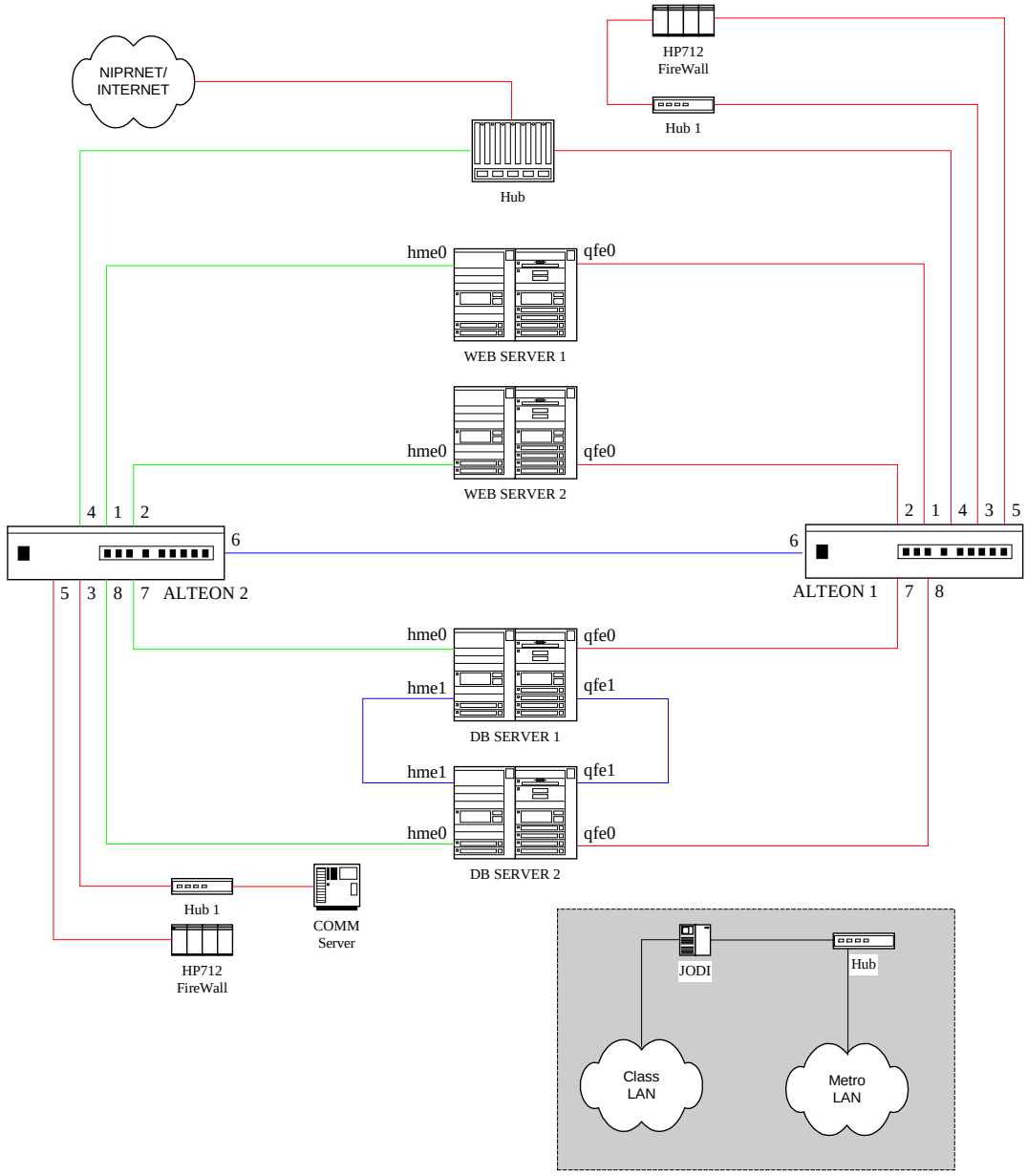


Figure 14. NIPRNET Connections

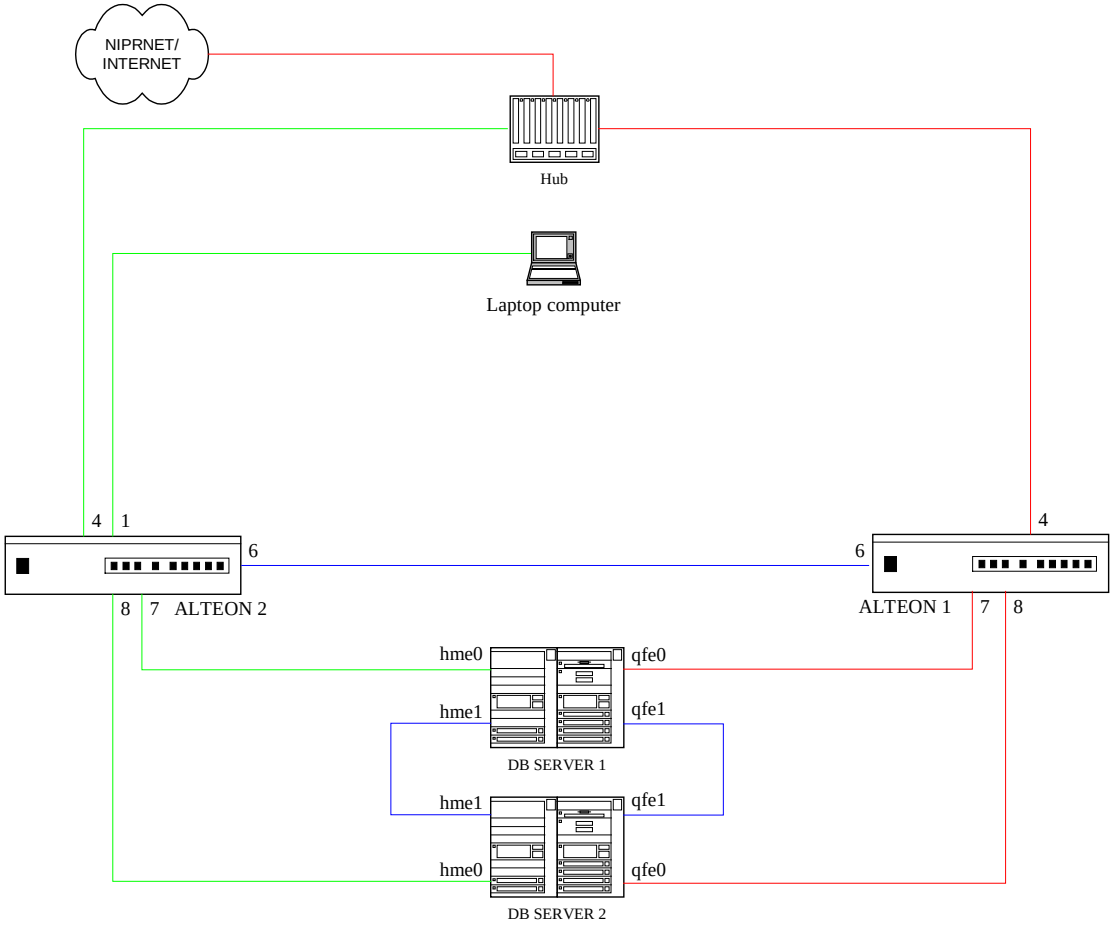


Figure 15. SIPRNET Connections

This page intentionally left blank.

5 SOFTWARE INSTALLATION

This section provides details for all software installations. Note that the installations are machine-specific -- not all installations apply to all machines. In the installation descriptions, items you type in and lines in files you need to edit are in Courier type (this is a type in item). The Enter key is represented as `<Enter>`.

5.1 ABOUT THE INSTALLATION FILES

The installation media is a CD-Rom that has a TAR file consisting of all the software needed for all of the different loads. When you go to do the installation, install all of the software.

5.2 INSTALLING SOLARIS 2.6 OPERATING SYSTEM

This installation is to be performed on all seven of the computer systems making up the Regional Center System.

1. Turn the system on and wait until the initial prompt appears.

2. Insert the Solaris 2.6 Installation CD-ROM in the CD-ROM drive and type `boot cdrom<Enter>`. This starts the installation procedure.

3. At the **Select Language and Locale** window, select **English - USA - English (ASCII Only)** and then click the **Continue** button.

4. At the **Solaris Installation Program** window, click the **Continue** button.

5. At the **Identify This System** window, click the **Continue** button.

6. At the **Host Name** window, enter host name and click the **Continue** button.

7. AT the **Network Connectivity** window, select **Yes** and click the **Continue** button.

8. At the **Primary Network Interface** window, select **qfe0** (this is the first port on the Quad Ethernet Adapter) and click the **Continue** button.

9. At the **IP Address** window, enter the IP address for this system and click the **Continue** button.

10. At **the Confirm Information** window. Review the information and click the **Continue** button if it is correct. If any of the information was not entered correctly, click the **Change** button and you'll be sent back to the Host Name dialog to start over again from there.

11. At the **Name Service**, Select **None** and click the **Continue** button.

12. At the **Confirm Information** window, click the **Continue** button, and the Subnets dialog is displayed.

13. Select **Yes** and click the **Continue** button. The Netmask dialog is displayed.

14. Enter your netmask (e.g. 255.255.255.0) and click the **Continue** button.

15. At the **Time Zone** window, select **Offset From GMT** and click the **Set** button.

16. At the **Offset From GMT** window, select 0 and click the **Continue** button.

17. At the **Date and Time** window, enter the current date and GMT and click the **Continue** button.

18. At the **Confirm Information** window, review the information and click the **Continue** button if it is correct.

19. At the **Solaris Interactive Installation** window, click the **Continue** button.

20. At t The **Allocate Client Services** window, click the **Continue** button.

21. At the **Select Languages** window, click the **Continue** button.

22. At the **Select Software** window, select **Entire Distribution** and click the **Continue** button.

23. At the **Select Disks** window, select **c0t0d0** and click the right-arrow button to move it into the **Selected Disks** box (Note: only **c0t0d0** disk should be in the **Selected Disks** box). Then click the **Continue** button.

24. At the **Preserve Data** window, click the **Continue** button.

25. At the **Automatically Layout File System** window, select **Manual Layout** and click the **Continue** button.

26. At the **File System and Disk Layout** window, click the **Customize…** button.

27. At t The **Customize Disks** window, enter the following values:

Slice	Name	Size
0	/	70
1	Swap	1024
2	Overlap	8633
3	/var	150
4	/opt	4096
5	/usr	1024
6		
7		

When all entries are completed, click the **OK** button. An Unused Disk Space warning is displayed. Click the **OK** button to dismiss it.

28. At the **File System and Disk Layout** window, click the **Continue** button.

29. At the **Mount Remote File Systems** window, click the **Continue** button.

30. At the Mount Remote File Systems dialog is displayed, click the **Continue** button.

31. At the **Profile** window, verify all settings and click the **Begin Installation** button. (Note: A Warning window may appear at this point. If it does, click the **OK** button.)

32. At the **Auto Reboot** window, select **Auto Reboot** and the installation process will begin. The entire process takes about 30 minutes.

33. Following the installation, the machine will reboot and then prompt you for the root password. Enter it, then re-enter it when prompted to confirm. The machine will then reboot again.

34. When prompted, log in as root with the root password. At **Welcome to Solaris** window, select **Common Desktop Environment (CDE)** and click the OK button. The machine will then open the CDE.

35. Click on the up arrow above the **Personal Applications** menu (icon showing a piece of paper and a pen) to pull up the menu. Select **Terminal** from the pull-up menu. A terminal window will open on screen.

36. In the terminal window, type `eject cdrom<Enter>`. this will eject the CD-ROM from the drive, completing the basic Solaris 2.6 installation. Now you must install the patches.

37. Insert the Patch CD-ROM into the CD-ROM drive.

38. In the terminal window, type `cd /cdrom/cdrom0<Enter>`.

39. Type ./`patchinstall`.

40. Continue with patch installation? [y] default.

41. Where should I store temporary file? [/tmp] default.

42. Would you like to save the orignal versions of the software? [n] default.

43. Patch to install (patch, suggested, ?): suggested `<Enter>`.

44. At installation setup window, verify and at Is this corrected? [y] default. (Note: This will takes about 10 min)

45. When patch installation is completed, reboot the machine. This concludes the Solaris 2.6 installation.

5.3 CONFIGURING THE NETWORK

Network configuration is accomplished by editing several files and then rebooting. The files to be edited, and the changes to be made, are discussed below.

5.3.1 The hostname Files

In the /etc directory, create or edit the following files:

1. **/etc/hostname.qfe0**: Contains one line with the host name for this machine (e.g. fred).

2. **/etc/hostname.qfe1**: Contains one line with the primary heartbeat host for the current machine, which is the machine name followed by -h (e.g. fred-h).

3. **/etc/hostname.hme1**: Contains one line with the secondary heartbeat host for the current machine, which is the machine name followed by -bh (e.g. fred-bh).

4. **/etc/defaultrouter**: Contains one line with the name of the primary Alteon switch (e.g. alteon1).

5. **/etc/netmasks**: Should contain a line specifying the netmask for the local network. The System Administrator should supply this information. This may consist of the first part of the network's IP address followed by the netmask, e.g.

   # Local Network
   152.80.34 255.255.255.0

   If the current machine has FirstWatch installed, the netmasks for the heartbeat hosts must also be added. A typical *netmasks* file is shown below, with added entries in boldface. The IP addresses and netmasks will be different for your installation.

```
# The netmasks file associates Internet Protocol
# (IP) address masks with IP network numbers.
#
#  network-number  netmask
#
# Both the network-number and the netmasks are
```

```
# specified in "decimal dot" notation,e.g:
# 128.32.0.0    255.255.255.0
#
152.80.34    255.255.255.0
#
#    FIRST WATCH HEARTBEAT NETWORKS
#
10.1.1.0     255.255.255.0
10.1.2.0     255.255.255.0
```

6. **/etc/hosts**: Add "loghost" following the hostname for the current machine. Add entries for other machines on the network. If this machine has FirstWatch installed, add entries for the heartbeat hosts. A typical *hosts* file is shown below, with added entries in boldface (the IP address will be different for your installation).

```
#
# Internet host table
#
127.0.0.1    localhost
152.80.34.123     betty      loghost

152.80.34.122     barney
#
#    OUTSIDE HOSTS
152.80.34.202     nites-2
#
#    INSIDE HOSTS
152.80.34.120    alteon1
152.80.34.121    alteon2
152.80.34.125    rubble     # veritas failover port
#
#    FIRST WATCH HEARTBEAT HOSTS
#
10.1.1.1     barney-h
10.1.1.2     betty-h
10.1.2.1     barney-bh
10.1.2.2     betty-bh
```

7. **/etc/nsswitch.conf**: At the end of “the hosts: files” line, add dns [NOTFOUND=continue].

   This line should now read as following
   hosts: files dns [NOTFOUND=continue]

8. **/etc/resolv.conf**: This file should contain two lines. The first line contains domain followed by a tab and the name of the local domain. The second line contains nameserver followed by a tab and the IP address of the local nameserver.

9. **/etc/inetd.conf**: Edit inetd.conf to secure the network. Modify inetd.conf for both database and web servers.

    a. Install “tcp-wrappers” to enable connection audit (or you can use any other audit program)

    b. Down load “tcpd” pre-compile binary file from the nites.nosc.mil\sun\tcp_wrappers web site to /usr/sbin/ directory of SUN server

    c. chmod 755 /usr/sbin/tcpd

    d. vi /etc/inetd.conf

    e. Modify the services in the inetd.conf that you want to audit. For example I want to audit both FTP and TELNET connections. Do following modification in the inetd.conf file.

    Comment out the following line

    # ftp stream tcp nowait root /usr/sbin/in.ftpd in.ftpd

    Add the following line

    ftp stream tcp nowait root /usr/sbin/tcpd in.ftpd

    Comment out the following line

    # telnet stream tcp nowait root /usr/sbin/in.ftpd in.telnetd

    Add the following line

    telnet stream tcp nowait root /usr/sbin/tcpd in.telnetd

    f. Locate the line that controls sadmind.

    g. Append `-S 2` switches to the end of line.

    Note: The following commands disable the finger daemon when started from inetd.conf.

    h. Locate the line that controls the daemon.

    i. Type a # at the beginning of the line that starts with `rusersd` to comment out that line.

    j. Type a # at the beginning of the line that starts with finger to comment out that line.

10. Type the following commands in order to disable SNMP:

a. /etc/init.d/init.snmpdx stop

b. mv /etc/rc3.d/S76snmpdx /etc/rc3.d/DISABLED_S76snmpdx

11. After finish editing the inetd.conf file, the inetd service must stop and restart.

a. ps -ef | fgrep inetd

b. You will see a similarly following statement , which it shows a PID of inetd service (i.e. it is 512 in this case)

root 512 1 0 Jun30 0:00 /usr/sbin/inetd

c. kill -HUP 512

(Note: DO NOT FORGET "-HUP" OPTION. OTHERWISE, YOU WILL KILL ALL SERVICES)

d. Make sure you audit the syslog file regularly to monitor your network.

tail -500 /var/log/syslog

12. /etc/services. All services, which are not used on your network, should be disabled to maximize your network security.

a. vi /etc/services

b. put a # sign in font of the following services:

smtp bootpc bootps tftp finger

nntp uucp who new-rwho

monitor telnet

5.4 CONFIGURING THE RAID DISKS

This section applies to all database machines (fred, wilma, barney, and betty). It deals with setting up and configuring the RAID disks.

Ensure that the /kernel/drv/sd.conf file has been edited with the following lines:

```
name="sd" class="scsi"
     target=3 lun=0;
```

Then copy these lines 15 times and change them so that the number following `lun=` ranges from `1` to `15` (that is, the first copy gets `lun=1`, the next copy gets `lun=2`, and so forth through `lun=15`.

1. Edit the /etc/remote file.

   a. First make a copy of the file so that it can be recovered if necessary.
   `cp /etc/remote /etc/remote.original<Enter>`

   b. Open the /etc/remote file in a text editor (vi or the CDE Text Editor, found in the Personal Applications menu).

   c. Find the two-line entry:

   ```
   hardwire:\
     :dv=/dev/term/b:br#9600:el=^C^S^Q^U^D:ie=%$:oe=^D:
   ```

   and copy it.

   d. Paste two copies of the entry just below the original.

   e. In the first copy, change hardwire:\ to raidporta:\ and /term/b to /term/a.

   f. In the second copy, change hardwire:\ to raidportb:\. The entries should now look like this:

   ```
   hardwire:\
      dv=/dev/term/b:br#9600:el=^C^S^Q^U^D:ie=%$:oe=^D:
   raidporta:\
      dv=/dev/term/a:br#9600:el=^C^S^Q^U^D:ie=%$:oe=^D:
   raidportb:\
      dv=/dev/term/b:br#9600:el=^C^S^Q^U^D:ie=%$:oe=^D:
   ```

   g. Save the changes and exit the text editor.

2. Configure the RAID and Create a RAID Set.

   NOTE: To edit a particular field in the Raid Main Menu, cursor down to the field that you want to edit and <Enter>. You will then be in the insert/text edit mode. Edit the field and <Enter> to save the changes, and press Ctrl-Z to return to the Main Menu.

   a. Enter the controller menu by typing tip raidporta<Enter>. The system will report back "connected. <Enter> key once or twice to establish communications and access the RAID menu.

b. In the Main Menu, cursor down to Setup Parameters<Enter>, select Rdnt Ctrlr Parameters and <Enter>.

c. **Set the Controller Name to LEFT, Host I/O Channel 0 to Active, and Host I/O Channel 1 to Active. Press <Enter> after setting each field to save the changes. Press Ctrl-Z to return to the Main Menu.**

d. Enter the other Raid Controller Main Menu by typing `tip raidportb <Enter>`. The system will report back "connected. <Enter> key once or twice to establish communications and access the RAID menu.

e. **In the Main Menu, cursor down to Setup Parameters, select Rdnt Ctrlr Parameters and <Enter>.**

f. **Set the Controller Name to RIGHT, Host I/O Channel 0 to Passive, and Host I/O Channel 1 to Passive. Press <Enter> after setting each field to save the changes. Press Ctrl-Z to return to the Main Menu.**

g. **Switch back over to the Main Menu for Controller Name LEFT.**

h. From the Main Menu, cursor down to System Functions <Enter>, select **Restart System and** <Enter> twice.

i. **<Enter> to restart the controller.**

j. From the Main Menu, select **Setup Parameters** and <Enter>.

k. Select **Host LUN Mapping** and <Enter>.

l. With Channel 0 highlighted, press D to populate with defaults, then press N to move to Channel 1 and press D again. Press Ctrl-Z to exit.

m. In the Main Menu, cursor down to **Setup Parameter** and <Enter>**.**

n. Select **Host Parameters** and <Enter>.

o. Set Channel 0 SCSI ID to 3 and <Enter> to save the changes.

p. Set Channel 1 SCSI ID to 3 and <Enter> to save the changes.

q. Press Ctrl-Z to exit Host Parameters and return to the Main Menu.

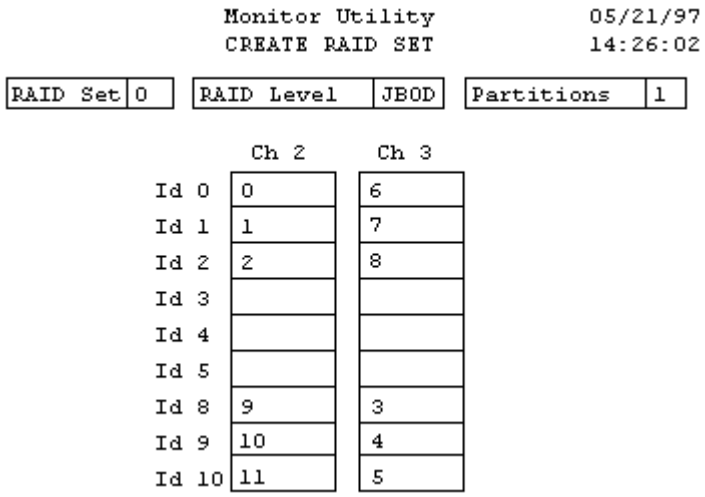
r. From the Main Menu, cursor down to System Functions <Enter>, select **Restart System and <Enter> twice**.

s. From the Main Menu, select **Raid Set Functions** and <Enter>.

t. Select **Create RAID Set** and <Enter>. This opens the RAID Set Configuration screen, where you select the drives for and configure a new RAID set. You use the

arrow keys to navigate among the fields, and the Enter key to edit the current (highlighted) field. Once you are in edit mode, use the arrow keys to navigate among the available values, and the Enter key to save the current (highlighted) value.

You will create one RAID set for each of the 12 drives (RAID sets 0 through 11) in order repeating steps q-r 12 times. For each RAID set, make the RAID level `JBOD`, which stands for "Just a Bunch of Disks". Under the Ch 2 column, the <Enter> key to set the value to `Onli for the first disk (Id 0) <Enter>`, then C twice and the <Enter> key. Press the Ctrl-Z to return to the Main Menu to create the next Raid set. When you are finished, the screen should look like this:



u. Enter `~. <Enter>` to exit the tip utility.

v. You will now need to format all 12 disks. At the # prompt, type: **format <Enter>**, Specify disk (Enter its number): **1** <Enter>, Label now: **y** <Enter>.

w. **Type: Disk** to get back to the list to select the next disk to format. Repeat this step 12 times.

x. **Type: quit to get back to the # prompt.**

y. Reboot the RAID Controllers, Hard Drives, and the SUN Servers.

z. To shutdown the SUN Server, type: shutdown –h now.

aa. At the {0}ok prompt, type: boot -- -r.

bb. Once the SUN Servers reboot, open a terminal window.

cc. At the SUN Server # prompt, type: **format,** verify that you see all of the Inline hard drives.

dd. Close the terminal window.

5.5 INSTALLING VERITAS

The Veritas Volume Manager/File Manager/File System product set will be installed on all machines except the firewall (bambam) and NIPRNET web servers. Veritas FirstWatch will be installed on all machines except the firewall (bambam) and the NIPRNET web servers (dino and pebbles). On the database machines, the RAID setup detailed in the previous section should be done before Veritas is installed. The steps below describe the Veritas installation fully. It is suggested that you enlarge the terminal window during installation of Veritas in order to fit the entire package list on the screen at once.

1. Log in as root.

2. Open a terminal window.

3. Ensure that you have the Veritas disk containing Volume Manager 2.6.1.

4. Insert the Veritas CD-ROM in the CD-ROM drive.

5. Type `cd /cdrom/cdrom0/Solaris_2_6/pkgs <Enter>.` (NOTE: In this and the steps to follow, <Enter> represents the Enter or Return key.)

6. Type `pkgadd -d . <Enter>`. This begins the installation of the Veritas software packages. From this point on, we provide a description of the program responses and prompts, and an entry for each prompt.

   a. The program displays the list of packages and asks you to select the package to process**.** Enter `1 <Enter>`.

   b. The program prompts, "Do you want to continue with the installation of <VRTSfdd>?" Enter `y <Enter>`.

   c. The program prompts, "Do you want to install these as setuid/setgid files?" Enter `y <Enter>`.

   d. The program prompts, "Do you want to continue with the installation of <VRTSfdd>?" Enter `y <Enter>`.

   e. After the installation is done you should see a message saying, "Installation of <VRTSfdd> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `2 <Enter>`.

   f. The program prompts you to select the document format to install. Enter `all <Enter>`.

   g. After the installation is done you should see a message saying, "Installation of <VRTSfsdoc> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process.

(Note: If you are installing on one of the NIPRNET Web Servers, skip to step w. Otherwise, proceed with step i.)

h. Enter `3 <Enter>`. You are prompted to enter the path to the package base directory. Enter `/opt <Enter>`.

i. You are asked whether to continue with FirstWatch Server setup. Enter `y <Enter>`.

j. The program displays some help and then asks, "What kind of link is the second heartbeat?" Enter `Ethernet <Enter>`.

k. You will then be asked to enter the LOCAL HOSTNAME for HEARTBEAT LINK 1. Enter the current machine's host name followed by -h (e.g. wilma-h) followed by `<Enter>`.

l. You will then be asked to enter the LOCAL HOSTNAME for HEARTBEAT LINK 2. Enter the current machine's host name followed by -bh (e.g wilma-bh) followed by `<Enter>`.

m. You will then be asked to enter the REMOTE HOSTNAME or IP# for HEARTBEAT LINK 1. Enter the host name of the other machine in the pair followed by -h (e.g. fred-h) followed by `<Enter>`.

n. You will then be asked to enter the REMOTE HOSTNAME or IP# for HEARTBEAT LINK 2. Enter the host name of the other machine in the pair followed by -bh (e.g. fred-bh) followed by `<Enter>`.

o. The program then lists your entries and prompts, "Is this correct?" Enter `y <Enter>`.

p. The program then informs you that certain files are already installed on the system and are being used by another package, and asks, "Do you want to install these conflicting files?" Enter `y <Enter>`.

q. The program asks, "Do you want to continue with the installation of <VRTSfw>?" Enter `y <Enter>`.

r. After installing the files, the program should inform you that, "Installation of <VRTSfw> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `4 <Enter>`.

s. The program then asks you to enter the path to the package base directory. Enter `/opt <Enter>`.

t. After installing the files, the program should inform you that, "Installation of <VRTSfwdoc> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `5 <Enter>`.

u. You are prompted to select the document formats to be installed. Enter `all <Enter>`.

v. After installing the files, the program should inform you that, "Installation of <VRTSsadoc> was successful."

w. The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `6 <Enter>`.

x. After installing the files, the program should inform you that, "Installation of <VRTSmdev> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `7 <Enter>`.

y. You are prompted to select the document formats to be installed. Enter `all <Enter>`.

z. After installing the files, the program should inform you that, "Installation of <VRTSvmdoc> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `8 <Enter>`.

aa. After installing the files, the program should inform you that, "Installation of <VRTSvmman> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `9 <Enter>`.

bb. You are asked, "Where should this package be installed?" Enter `/opt <Enter>`.

cc. You are then asked, "Should the Apache HTTPD (Web Server) included in this package be installed?" Enter `n <Enter>`.

dd. You are then asked, "Should the Volume Manager Storage Administrator Server be installed?" Enter `y <Enter>`.

ee. Some information is displayed and you are asked if you want to continue with the installation of <VRTSvmsa>. Enter `y <Enter>`.

ff. Some information is displayed and you are asked again if you want to continue with the installation of <VRTSvmsa>. Enter `y <Enter>`.

gg. After installing the files, the program should inform you that, "Installation of <VRTSvmsa> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `10 <Enter>`.

hh. The system informs you that certain files are already installed on the system and are being used by another package, and asks, "Do you want to install these conflicting files?" Enter `y <Enter>`.

ii. The program asks whether you want to install these as setuid/setgid files. Enter `y <Enter>`.

jj. The program asks if you want to continue with the installation of <VRTSvxfs>. Enter `y <Enter>`.

kk. After installing the files, the program should inform you that, "Installation of <VRTSvxfs> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `11 <Enter>`.

ll. The program asks whether you want to continue with the installation of <VRTSvxld>. Enter `y <Enter>`.

mm. You are asked, "Would you like to license the product at this time?" Enter `n <Enter>`.

nn. After installing the files, the program should inform you that, "Installation of <VRTSvxld> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `12 <Enter>`.

oo. The program displays some information and asks whether you want to continue with the installation of <VRTSvxva>. Enter `y <Enter>`.

pp. The program displays some information and asks again whether you want to continue with the installation of <VRTSvxva>. Enter `y <Enter>`.

qq. After installing the files, the program should inform you that, "Installation of <VRTSvxva> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process. Enter `13 <Enter>`.

rr. The program informs you that certain files are already installed on the system and are being used by another package, and asks, "Do you want to install these conflicting files?" Enter `y <Enter>`.

ss. The program asks whether you want to install these as setuid/setgid files. Enter `y <Enter>`.

tt. The program asks whether you want to continue with the installation of <VRTSvxvm>. Enter `y <Enter>`.

uu. After installing the files, the program should inform you that, "Installation of <VRTSvxva> was successful." The package list is then displayed and you are prompted to select the package(s) you wish to process.

vv. Enter `q <Enter>` to quit the installation process.

7. This completes the initial setup of Veritas. The following procedure is used to install the Veritas licenses:

   a. In the terminal window, type `vxinstall <Enter>`. You will be presented with a list of keys already installed, if any, and asked whether you want to enter another key. Enter `y <Enter>`.

   b. You will be prompted to enter a key.

   c. Enter the key for VxVM 2.X BASE FUNCTIONS, followed by `<Enter>`.

   d. You will be asked whether you want to enter another key. Enter `y <Enter>`.

   e. You will be prompted to enter a key.

   f. Enter the key for VxVM 2.x RAID-5, followed by `<Enter>`.

   g. You will be asked whether you want to enter another key. Enter `y <Enter>`.

   h. You will be prompted to enter a key.

i. Enter the key for VxFS 2.X/VxFS 3.X, followed by `<Enter>`.

j. You will be asked whether you want to enter another key. Enter `n <Enter>` key at the next two prompts.

k. The Installation Type menu will appear. Enter `2 <Enter>` for a Custom Installation.

l. You will then be asked whether to encapsulate the boot disk. Enter `y <Enter>`.

m. You will be prompted for the name of the root disk. Enter `rootdisk <Enter>` or just press the `<Enter>` key.

n. Press the `<Enter>` key at the next three prompts. A menu will appear giving options for the preinstalled disks. Enter `4 <Enter>` (Leave these disks alone). (**Note**: Exclude all other disks and RAIDS hooked up).

o. The next prompt asks you to review the entries. If the entries are correct, enter `y <Enter>`.

p. You will be asked if it is okay to shutdown and reboot now. Enter `y <Enter>`.

q. The machine will then reboot twice under the control of the Veritas script.

8. The following files now need to be added or edited.

a. For machines with Veritas FirstWatch installed, edit the */etc/ha.conf* file. Add the lines shown below from # LOG Settings down. Bold type shows the entries that need to be customized for your installation. The Betty_DG entry below is the name of the primary disk group on the RAID array. The betty_db entries are the name of the Informix database and are only used on database servers. The last entry, containing Apache, is only for the web servers. NOTE: a backslash (\) indicates a continuation of the line and **should not** be entered in the file.

```
    # FirstWatch Configuration File
#
HEARTBEAT.LOCAL.HOST.1              betty-h
HEARTBEAT.LOCAL.HOST.2              betty-bh
HEARTBEAT.REMOTE.HOST.1             barney-h
HEARTBEAT.REMOTE.HOST.2             barney-bh
HA.INSTALL.PATH                     /opt/VRTSfw

# LOG Settings
LOG.DIRECTORY /var/log
MAX.LOGSIZE 1
KEEP.LOG

# Current version of VxVM
VXVM 2

# Primary Disk Groups (Note: These comment lines and the next three
# lines need to be added to the primary server only)
```

```
VXVM_DSKGRPS_P Betty_DG

KEY <FirstWatch Agent for Informix key>
ASYMMETRIC.PRIMARY

# Takeover Disk Groups (Note: These comment lines and the next three
# lines need to be added to the secondary server only)
VXVM_DSKGRPS_T Betty_DG

KEY <FirstWatch Agent for Informix key>
ASYMMETRIC.TAKEOVER

#AGENT haInformix "Monitor Informix OnLine Server betty_db"\
   -d -fail MSG -interval 60 -tolerance 2 -restarts 2 -user\
   betty_db #VRTSfwifx

#AGENT haInformix "Monitor Informix OnLine Server betty_db"\
   -p -fail HALT_SOFT -interval 60 -tolerance 2 -restarts 2\
   -log -user betty_db #VRTSfwifx

#AGENT haHttpd "Monitor httpd" -d -interval 30 -tolerance 2\
   -log -user Apache 1 #VRTSfwWeb
```

9. Reboot the system by issuing the command `reboot -- <Enter>`. After the reboot, Veritas installation is complete.

5.5.1 Using Veritas Volume Manager to Partition the RAID Array

This section deals with the use of the Veritas Volume Manager and its Visual Administrator to partition the RAID array. **Section 5.5.1.1 is ONLY applicable to the primary database server**

5.5.1.1 Placing the RAID Array Under Veritas Volume Manager Control

The following steps are used to place the RAID array under Volume Manager Control:

1. Open a terminal and enter the command `/usr/sbin/vxdiskadm <Enter>`.

2. This opens the Veritas Volume Manager Disk Administrator program and displays its main menu. Enter `1` (Add or initialize one or more disks) and press the `<Enter>` key.

3. An informational message is displayed. Enter `list <Enter>`.

4. A list of disk controllers is displayed. Enter `c1 <Enter>`.

5. The program prompts "Here is the disk selected. Continue operation?" Enter `y <Enter>`.

6. The program displays a message and asks which disk group you wish to add the disk to. Enter a disk group name (xxx_DG) <Enter>

   (Note: The disk group name is the name of the primary machine of the pair (i.e. Wilma or Betty) followed by _DG (e.g. Wilma_DG).)

7. Create a new group name xxxx_DG ? (default: y) Enter y <Enter>. (Note: xxxx_DG is the entry you just type in step 6)

8. The program asks whether you want to use a default name for these disks. Enter `y <Enter>`.

9. The program asks whether you want to add disks as a spare disk for rootdg. Enter `n <Enter>`.

10. The program presents a message and asks whether you want to continue with the operation. Enter `y <Enter>`.

11. The program presents a message and asks whether you want to encapsulate the device(s). Enter `n <Enter>`.

12. The program then asks whether you want to initialize the disk(s) instead of encapsulating them. Enter `y <Enter>`.

13. The program tells you what it has done and then asks whether you want to initialize any more disks. Enter `n <Enter>`.

14. You are returned to the Main Menu. Enter `q <Enter>`.

15. This exits the Disk Administration program. The RAID array is now under Veritas Volume Manager control.

5.5.1.2 Visual Administrator Objects

The Veritas Visual Administrator provides a graphical user interface to the Volume Manager. In addition, the Visual Administrator acts as an interface to several common file system operations. The Visual Administrator interface is relatively intuitive and easy to use. Windows, menus, forms, and icons are provided to help you. The subsections below provide fundamentals of the Visual Administrator to aid in its use.

The Visual Administrator represents the various Volume Manager objects through icons. When a change is made to existing Volume Manager objects using the Visual Administrator (or another Volume Manger interface), every open Visual Administrator session on the same system automatically adjusts its icons to reflect the change.

Volumes are usually composed of plexes (mirrors), which are composed of subdisks. Volume icons therefore typically contain associated plex icons which, in turn, contain associated subdisk icons.

The Visual Administrator uses the following icons to represent Volume Manager objects.

Physical Disk Icon

Physical disks appear as cylindrical icons labeled PD. These icons contain rectangular partition icons. Physical disk icons represent physical disks known to the Visual Administrator. Physical disk icons appear in the View of Disks.

Figure 16. Physical Disk Icon

Partition Icon

Partitions appear as rectangular icons within physical disk icons. A partition icon is labeled with the name of the physical disk with which it is associated (disk access name). If a VM disk exists for a partition (and its corresponding VM disk icon appears in a disk group view), the partition icon is shaded. A partition usually represents slice 2 of the disk (all application-accessible space on the disk). Partition icons appear in the View of Disks. The black rectangle in the figure above is the partition icon for that physical disk.

VM Disk Icon

VM disks appear as cylindrical icons labeled D. They usually contain subdisks, which are represented as rectangles. A VM disk is one that is both under Volume Manager control and assigned to a disk group. VM disk icons represent the disk media records used to map the logical aspect of VM disks to physical disks. A VM disk icon is labeled with its disk media name. The name of the partition with which the VM disk is associated appears below the VM disk icon. VM disk icons typically appear in a disk group view. If a VM disk is designated as a hot-relocation spare, its icon label changes from D to S.

Figure 17. VM Disk Icons

Plex Icon

Plexes appear either alone or within volumes as relatively large rectangles containing subdisks. Plex icons have a heavy border to distinguish them from partition or subdisk icons. Plex icons typically appear in disk group views and in the View of Volumes.

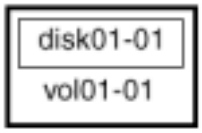


Figure 18. Plex Icon

Striped and Concatenated Plexes

Striped and concatenated plexes differ visually in that a striped plex has gaps between its subdisks, while the subdisks of a concatenated plex are joined. The figure below illustrates the difference between concatenated (vol01-01) and striped (vol02-01) plexes.

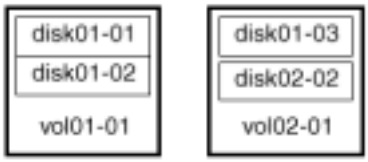


Figure 19. Concatenated and Striped Plex Icons

Striped Plex Icon

The figure below illustrates a striped plex with one subdisk in the top stripe column and multiple subdisks in the middle and bottom columns. The bottom column contains a gap where a subdisk has been removed; this gap can be filled with one or more subdisks.

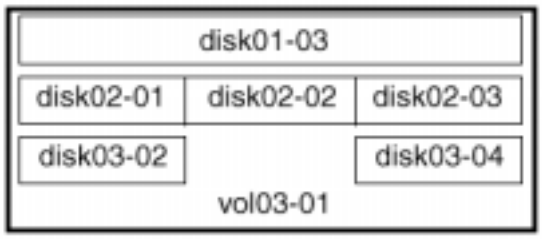


Figure 20. Plex Icon for a Striped Plex With Multiple Disks per Column

Volume Icon

Volumes appear as cylindrical icons labeled V. These icons often contain plex and subdisk icons. Volume icons are distinguished from disk icons by a heavy border. Volume icons typically appear in disk group views and in the View of Volumes.

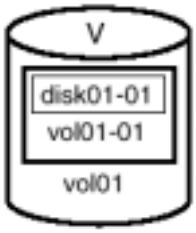


Figure 21. Volume Icon

Mirrored Volume Icon

Mirrored volumes contain two or more plex icons. The following is a mirrored volume with one striped plex (vol01-01) and one concatenated plex (vol01-02).

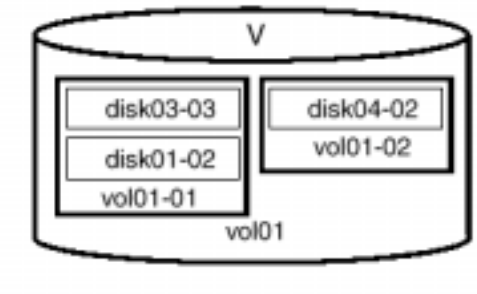


Figure 22. Mirrored Volume Icon

5.5.1.3 Creating Disk Volumes In Veritas Visual Administrator

This section describes the process of creating volumes in Visual Administrator, and then provides a listing of the volumes that are required for various machine sets.

To open the Visual Administrator, type

```
/opt/VRTSvxva/bin/vxva <Enter>
```

This opens the Visual Administrator control panel. To view the RAID disk group, click the **Wilma_DG** or **Betty_DG** button. This opens a view that graphically depicts all of the disks and volumes present on the system. At the outset, you should see 12 disks and no volumes.

To create a simple volume:

1. Select the disk that will contain the volume.

2. Click **Basic-Ops** in the menu bar, then **Volume Operations**, **Create**, and **Simple**. The Simple Volume/FS Create Form will appear. In the Volume Name box, enter the name of the volume you are creating (e.g. apache). In the Volume Size box, enter the size of the volume followed by m for megabytes, g for gigabytes, or k for kilobytes (e.g. 100m for a 100-megabyte volume). In the Usage Type box, click the **gen** radio button if the volume is a BLOB volume (name ending in _blob), or the **fsgen** button

otherwise. If the volume is to be mounted, enter the mount point in the Mount Point box and click the **Mount Automatically** **No** button. Then click on the **Apply** button. A new Volume icon should appear on the screen..

To create a simple mirror:

1. Select the volume to be mirrored using the left mouse button. Its icon will change color.

2. Using the middle mouse button, select at least the disk on which to create the mirror. If the original volume is on the disk set {0, 1, 2}, the mirror should be on the disk set {3, 4, 5}. If the original volume is on the disk set {6, 7, 8} the mirror should be on the disk set {9, 10, 11}. The icons of the selected disks will change color.

3. Click **Basic-Ops** on the menu bar, then **Volume Operations**, then **Add Mirror**, then **Simple**. The mirror will be added and the volume icon will enlarge to show the mirror. The mirror plex may be grayed out momentarily while the mirror is being created.

To create a striped volume:

1. Select the disks across which the volume is to be striped. These should be disks from either of the following sets: {0, 1, 2} or {6, 7, 8} -- it's best not to mix across sets. To select multiple disks use the middle mouse button. More than one disk must be selected in order to create a striped volume. (e.g. 100m for a 100-megabyte volume).

2. Click **Basic-Ops** in the menu bar, then **Volume Operations**, **Create**, and **Striped**. The Striped Volume/FS Create Form will appear. In the Volume Name box, enter the name of the volume you are creating (e.g. mdgrid-db). In the Volume Size box, enter the size of the volume followed by m for megabytes, k for kilobytes, or g for gigabytes (e.g. 100m for a 100-megabyte volume). In the Usage Type box, click the **gen** radio button if the volume is a BLOB volume (name ending in _blob), or the **fsgen** button otherwise. If the volume is to be mounted, enter the mount point in the Mount Point box and click the **Mount Automatically** **No** button. Then click on the **Apply** button. A new Volume icon should appear on the screen.

To create a striped mirror:

4. Select the volume to be mirrored using the left mouse button. Its icon will change color.

5. Using the middle mouse button, select at least two disks on which to create the mirror. If the original volume is on the disk set {0, 1, 2}, the mirror should be on the disk set {3, 4, 5}. If the original volume is on the disk set {6, 7, 8}, the mirror should be on the disk set {9, 10, 11}. The icons of the selected disks will change color.

6. Click **Basic-Ops** on the menu bar, then **Volume Operations**, then **Add Mirror**, then **Striped**. The mirror will be added and the volume icon will enlarge to show the mirror. The mirror plexes may be grayed out momentarily while the mirror is being created.

Table 1 below lists the volumes and mirrors to be created. Volumes and mirrors showing only one disk are created as Simple volumes and mirrors; those showing multiple disks are Striped volumes and mirrors. NOTE: All machines means all except bambam.

The figure below shows part of the final Volumes screen for Betty_DG.

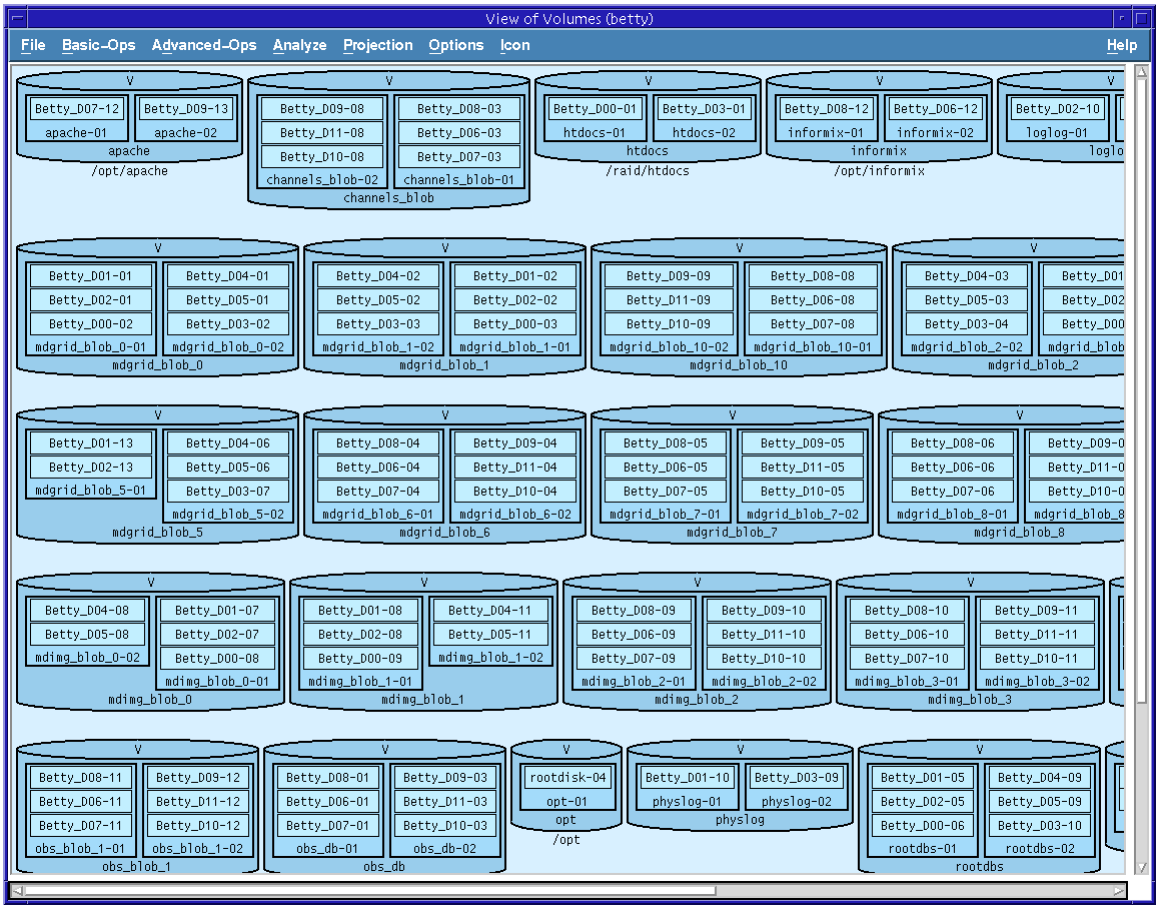


Figure 23. Volumes Display for Betty_DG

Note: For the Mount Point column in Table 5-1, **choose do not mount automatically**.

* Mount them on the RAID for SIPRNET. Mount them on the primary WEB server's local hard disk for NIPRNET

Table 5-1. Required Volumes

Volume Name	Size	Original on (Disks)	Mirrored to (Disks)	Type	Mount Point	Machines
apache	10m	7	10	fsgen	*/opt/apache	Database/Web servers
htdocs	2048m	0	3	fsgen	/raid/htdocs	Web servers only
informix	550m	8	11	fsgen	/opt/informix	Database servers only
loglog	60m	2	5	gen		Database servers only
mcsrvr	200m	0,1,2	3,4,5	fsgen	/opt/mcsrvr	Database/Web servers
mdgrid_blob_0	2048m	0,1,2	3,4,5	gen		Database servers only
mdgrid_blob_1	2048m	0,1,2	3,4,5	gen		Database servers only
mdgrid_blob_2	2048m	0,1,2	3,4,5	gen		Database servers only
mdgrid_blob_3	2048m	0,1,2	3,4,5	gen		Database servers only
mdgrid_blob_4	2048m	1,2	4,5	gen		Database servers only
mdgrid_blob_5	2048m	1,2	4,5	gen		Database servers only
mdgrid_blob_6	2048m	6,7,8	9,10,11	gen		Database servers only
mdgrid_blob_7	2048m	6,7,8	9,10,11	gen		Database servers only
mdgrid_blob_8	2048m	6,7,8	9,10,11	gen		Database servers only
mdgrid_blob_9	2048m	6,7,8	9,10,11	gen		Database servers only
mdgrid_blob_10	2048m	6,7,8	9,10,11	gen		Database servers only
mdgrid_db	500m	0,1,2	3,4,5	gen		Database servers only
mdimg_blob_0	2048m	0,1,2	3,4,5	gen		Database servers only

Table 5-1. Required Volumes

Volume Name	Size	Original on (Disks)	Mirrored to (Disks)	Type	Mount Point	Machines
mdimg_blob_1	2048m	0,1,2	3,4,5	gen		Database servers only
mdimg_blob_2	2048m	6,7,8	9,10,11	gen		Database servers only
mdimg_blob_3	2048m	6,7,8	9,10,11	gen		Database servers only
mdimg_db	300m	0,1,2	3,4,5	gen		Database servers only
mdchnl_blob	60m	6,7,8	9,10,11	gen		Database servers only
mdchnl_db	60m	6,7,8	9,10,11	gen		Database servers only
mdmetc_blob	60m	0,1,2	3,4,5	gen		Database servers only
mdmetc_db	60m	0,1,2	3,4,5	gen		Database servers only
physlog	30m	1	4	gen		Database servers only
Rootdbs	200m	0,1,2	3,4,5	gen		Database servers only
Tempdbs	240m	0,1,2	3,4,5	gen		Database servers only
Mcast	2048m	6	9	gen		Database servers only
mdllt_db	2048m	0,1,2	3,4,5	gen		Database servers only

5.6 INSTALLING INFORMIX

Edit the file `ha.env` on both database servers before installing INFORMIX.

cd `/opt/VRTSfw/env`

vi `ha.env`

Note: Load Informix only on the primary database server.

If you are installing METCAST on a SIPRNET machine, edit the file */opt/VRTSfw/env/ha.env*. Add a line under PRIMARY_MOUNTS for mcsrvr; the PRIMARY_MOUNTS section should then look like this:

```
PRIMARY_MOUNTS="\
/dev/vx/rdsk/Betty_DG/htdocs /dev/vx/dsk/Betty_DG/htdocs /raid/htdocs,\
/dev/vx/rdsk/Betty_DG/informix /dev/vx/dsk/Betty_DG/informix /opt/informix,\
/dev/vx/rdsk/Betty_DG/apache /dev/vx/dsk/Betty_DG/apache /opt/apache,\
/dev/vx/rdsk/Betty_DG/mcsrvr /dev/vx/dsk/Betty_DG/mcsrvr /opt/mcsrvr";\
export PRIMARY_MOUNTS
```

On the other machine of the pair, edit the */opt/VRTSfw/env.ha.env* file and add a line for mcsrvr to the TAKEOVER_MOUNTS section; it should then look like this:

```
TAKEOVER_MOUNTS="\
/dev/vx/rdsk/Betty_DG/htdocs         /dev/vx/dsk/Betty_DG/htdocs         /raid/htdocs,\
/dev/vx/rdsk/Betty_DG/informix      /dev/vx/dsk/Betty_DG/informix      /opt/informix,\
/dev/vx/rdsk/Betty_DG/apache         /dev/vx/dsk/Betty_DG/apache         /opt/apache,\
/dev/vx/rdsk/Betty_DG/mcsrvr /dev/vx/dsk/Betty_DG/mcsrvr /opt/mcsrvr";\

export TAKEROVER_MOUNTS
```

This section applies to all of the database server machines (fred, wilma, barney, and betty).

Before you install informix:

1. Use admintool to create group informix (GID=102) and user informix (UID=1002) who is a member of group informix. This is required for the installation scripts to run properly.

2. Open a terminal window and type `admintool <Enter>.`

3. Set the following parameters for Informix user and group:

   GID=102

   UID=1002

   Password=normal

Shell=Kornshell

HOME dir=/opt/informix

Deselect create home directory check box

The following steps should be performed on the primary database server only!

1. Make sure that the volume informix has been created on the RAID drive and mounted to /opt/informix. (to verify /opt/informix being mounted on the the RAID, type /opt/VRTSvxva/bin/vxva to bring up the **Visual Administrator** window. A xxxx_DG disk group button should show up in the window. If it does not show, /opt/informix is not mounted on the RAID yet)

2. chmod -R informix:informix /opt/informix

3. Log in as root.

4. Insert the Informix CD-ROM.

5. Open a terminal and type `cd /opt/informix <Enter>`.

6. Type `tar -xvf /cdrom/cdrom0/SERVER/IDS.TAR <Enter>`. This downloads the installation files from the CD-ROM onto your hard drive.

7. Type `INFORMIXDIR=/opt/informix;export INFORMIXDIR <Enter>`. This sets an environment variable required by the installation scripts.

8. Type `./installserver <Enter>` to commence the installation. The program will display a message. Press `<Enter>` to continue.

9. Enter the serial number at the prompt, followed by `<Enter>`.

10. Enter the key at the prompt, followed by `<Enter>`.

11. The program will display a message. Press `<Enter>` to continue.

12. After some installation messages, you should see the message "Installation of Informix Dynamic Server complete."

13. su - informix

14. Create the directory /opt/informix/dbspaces:

    `mkdir /opt/informix/dbspaces <Enter>`

15. Link to the dbspaces with the commands:
```
ksh <Enter>
for file in `cd /dev/vx/rdsk/Betty_DG;ls`<Enter>
do <Enter>
ln -s /dev/vx/rdsk/Betty_DG/$file /opt/informix/dbspaces/$file<Enter>
done <Enter>
```

16. Type `exit <Enter>`

17. Type `tar -xvf /cdrom/cdrom0/ICONNECT/SUN/CONNECT.TAR <Enter>`.

18. Type `./installconn -o <Enter>`.

19. The program displays a message, Your existing INFORMIX shared libraries, if any, will be replaced and upgraded. Are you sure? [yes/no], enter `y`. Press `<Enter>` to continue.

20. Enter the serial number at the prompt followed by `<Enter>`.

21. Enter the key at the prompt followed by `<Enter>`.

22. Press return to continue or the interrupt key (usualy CTRL-C or DEL) to abort, Press `<Enter>` to continue.

23. After some installation messages, you should see the message "Installation of Informix Connect complete." Remove Informix CD-ROM

24. Insert RC CD-ROM (form FNMOC) dated 12 July 1999 with lib.tar file. Un-tar it to the /opt/informix directory using the following commands:

    a. `cd /opt/informix`

    b. `mv lib lib.bak`

    c. `mkdir lib`

    d. `tar –xvf /cdrom/cdrom0/dist/infx_lib.tar`

    e. `chown –R informix:informix lib`

25. Create the Informix dbspaces. To do this, the following steps must be performed first:

    a. Create the .profile file by typing `/opt/informix/.profile <Enter>`

    (Note: see Configuration file in Appendix B)

    b. chmod 755 .profile.

c. cd /opt/informx/et

d. Type `cp onconfig.std onconfig.xxxx`

e. Type `vi onconfig.xxxx` (See Configuration file in Appendix B)

f. Type `cd /opt/informix/release/en_us/0333`

g. Type `more IDS_7.3` Copy all the lines that start with **`Set`** to the file `/etc/system`. Must be in root and edit this file for both Database Servers (See IDS_7.3 file).

h. Type `vi /opt/informix/etc/sqlhosts (See` Configuration file in Appendix B`)`

i. Type `cd /dev/vx/rdsk/yoko-dsun1u_DG` Must be in root.

j. Type `chown informix:informix *`

k. Type `chmod 660 *`

l. Reboot the server

m. cd /opt/informix/

n. chown –R informix:informix dbspaces

o. su - informix

p. Type `oninit –is` **Perform this step only once**.

q. Do you wish to continue (y/n)? Enter `y <Enter>.`

r. Type `vi /etc/onconfig.xxxx`

s. Switch users to informix: `su - informix <Enter>`

Create each of the dbspaces listed below, using the following command (all on one line):

```
onspaces -c -d <dbspace name> -p
/opt/informix/dbspaces/<dbspace name> -o 0 -s <size> <Enter>
```

once for each <dbspace name>. The <dbspace name> and <size> entries are replaced by the following:

dbspace name	size
tempdbs	120000
loglog	60000
physlog	15000

mdgrid_db	500000
mdimg_db	300000
mdchnl_db	60000
mdmetc_db	60000

Note: Ensure that dbspaces is owned by informix and has permissions 660.

26. Create the Informix blobspaces. This is a two-step process for each blobspace. First create the blobspace itself by typing the following command for each blobspace (all on one line):

```
onspaces -c -b <blobspace name> -g <pages> -p
/opt/informix/dbspaces/<first chunk name> -o 0 -s <size> <Enter>
```

The entries in angle brackets (< >) should be replaced as follows:

blobspace name	pages	first chunk name	size
mdgrid_blob	64	mdgrid_blob_0	2048000
mdimg_blob	64	mdimg_blob_0	2048000
mdchnl_blob	1	mdchnl_blob	60000
mdmetc_blob	1	mdmetc_blob	60000

After the all of the blobspaces have been created, the remaining chunks need to be added to each blobspace. This is done by typing the following command for each chunk (all on one line):

```
onspaces -a <blobspace name> -p /opt/informix/dbspaces/<chunk
name> -o 0 -s <size> <Enter>
```

The entries in angle brackets (< >) should be replaced as follows:

blobspace name	chunk name	size
mdgrid_blob	mdgrid_blob_1	2048000
mdgrid_blob	mdgrid_blob_2	2048000
mdgrid_blob	mdgrid_blob_3	2048000
mdgrid_blob	mdgrid_blob_4	2048000
mdgrid_blob	mdgrid_blob_5	2048000
mdgrid_blob	mdgrid_blob_6	2048000
mdgrid_blob	mdgrid_blob_7	2048000
mdgrid_blob	mdgrid_blob_8	2048000
mdgrid_blob	mdgrid_blob_9	2048000
mdgrid_blob	mdgrid_blob_10	2048000
mdimg_blob	mdimg_blob_1	2048000
mdimg_blob	mdimg_blob_2	2048000
mdimg_blob	mdimg_blob_3	2048000

27. If you have already installed FirstWatch Agent for Informix, you must ensure that both servers are frozen before performing the next three steps; otherwise FirstWatch will fail over. To freeze the servers, start the heartbeat agent monitor by typing `/opt/VRTSfw/HAmon <Enter>`. From the heartbeat agent monitor menu, select the **Manage Server** option, then **Freeze/Thaw Server**, and ensure that both servers are frozen.

28. Type `onmode -s <Enter>`. This puts Informix in quiescent mode.

29. This will perform a GRACEFUL SHUTDOWN – Do you wish to continue (y/n)? Enter `y <Enter>.`

30. Type `onparams -p -s 10000 -d physlog <Enter>`. This establishes the Informix physical log.

31. Do you really want to shutdown (y/n)? Enter `y <Enter>.`

32. Reset the Informix logical log. The steps for this are:

    a. Type `onstat -l <Enter>`. This displays the status of the logical logs. If there are more than 3, the excess ones should be deleted. The current log is marked with a C is the status columns and cannot be deleted. To delete a log, type `onparams -d -l <log number> <Enter>`. You will be asked whether you really want to do this -- enter `y <Enter>`. Ignore the message about performing a Level 0 backup. If you need to delete another log, repeat this step until you are down to 3 logs. You can use `onstat -l` to check the number of logs remaining.

    b. When down to 3 logs, type `onbar -b -F -L 0 <Enter>` to perform a fake Level 0 backup.

    c. Now type `onparams -a -d loglog -s 9000 <Enter>` three times to add three new logs. The `onstat -l` command now shows 6 logs again, with three marked with A in the status column to show that they are newly added.

    d. Repeat the `onbar -b -F -L 0 <Enter>` command to perform another fake Level 0 backup. The `onstat -l` command now shows an F (for Free) next to the 3 new logs.

    e. Now you need to make one of the new logs the current log, so that you can delete the old logs. Type `onmode -l <Enter>` to do this. Check `onstat -l` again to verify that one of the new logs is now the current log.

    f. Delete the old logs using the `onparams -d –l <log number> <Enter>` command three times.

g. Type `onstat –l`.

h. Repeat the `onbar -b -F -L 0 <Enter>` command to perform another fake Level 0 backup.

i. Add three new logs using the `onparams -a -d loglog -s 9000 <Enter>` command three times.

j. Repeat the `onbar -b -F -L 0 <Enter>` command to perform another fake Level 0 backup. The `onstat -l` command now shows three new free logs.

k. Type `onmode -m <Enter>` to return Informix to multiuser mode. Type `exit <Enter>` to return to the root user.

5.7 INSTALLING VERITAS FIRSTWATCH AGENT FOR INFORMIX

This section applies only to both database servers (Database Servers #1 and #2, SDBW #1 and #2). The Veritas FirstWatch Agent for Informix monitors the Informix server on the primary machine of the pair and, if it fails, switches database services to the secondary machine. FirstWatch Agent for Informix will be installed in an asymmetrical configuration (that is, a primary FirstWatch server (e.g. Database Server #1) being monitored by a takeover server (e.g. Database Server #2), which is running solely to take over the services provided by the primary server in the event of a failure. The installation should be performed on the primary machine of each pair first. The installation procedure is as follows:

1. Log in as root.

2. Insert the FirstWatch Agent for Informix CD-ROM in the CD-ROM drive.

3. Open a terminal window.

4. Type `pkgadd -d /cdrom/cdrom0/pkgs/ VRTSfwifx <Enter>`. This installs the software and triggers the agent setup procedure. This procedure begins by prompting for the Informix OnLine server name.

5. Type `<dbname> <Enter>`, where <dbname> is the database name for the pair (e.g. wilma_db). You will then be prompted for the Informix installation directory path.

6. Type `/opt/informix <Enter>`. You will then be prompted for the name of the *onconfig* file.

7. Type `onconfig.<servername> <Enter>`, where servername is the name of the database server (e.g. `onconfig.betty` for a server named betty).

8. If you are installing on the first server of the pair (which should be the primary server), you will then be asked whether this server is the primary server. Enter `y <Enter>`. If you are installing on the second server of the pair, proceed on to the next step.

9. A summary of the information entered so far will be presented and you will be asked whether it is correct.

10. Review the information and, if it is correct, enter `y <Enter>`. You will then be asked if you want to monitor any more Informix OnLine Servers.

11. Enter `n <Enter>`. Do you want to continue with the installation of <VRTSfwifx> [y/n,?] enter `y <Enter>`. You should receive a message saying that the installation was successful. If an error occurs, a message will appear telling you what log file to check for more information.

12. Type `cd /opt/VRTSfw <Enter>`.

13. Type `cp genericAgent/agentDriver agents/haInformix <Enter>`.

14. Type `eject cdrom <Enter>` to recover the CD-ROM.

15. Insert the revised Regional Center Installation CD-ROM for SUN Solaris 2.6 (12 July 99).

16. In the terminal window, type `cd /tmp`

17. Type `tar –xvof /cdrom/cdrom0/dist/vrts_pch.tar`

18. Type `cd /opt/VRTSfw/agents`

19. Type patch –i /tmp/haInformix.test.diff haInformix.test

20. Type cd ../env

21. Type patch –i /tmp/haInformix.env.diff haInformix.env

22. Type `cd /opt/VRTSfw/bin <Enter>`.

23. Type `./HAd -kill <Enter>` to kill the FirstWatch instance currently running.

24. Type `./HAd <Enter>` to start a new FirstWatch instance using the new drivers.

25. Repeat steps 1-23 above on the secondary server of the pair.

26. Create an Informix user and group for the secondary database server.

27. Use admintool to create group informix and user informix who is a member of group informix. This is required for the installation scripts to run properly.

28. Open a terminal window and type `admintool <Enter>.`

29. Set the following parameters for Informix user and group:

    GID=102

    UID=1002

    Password=normal

    Shell=Kornshell

    HOME dir=/opt/informix

    Deselect create home directory check box

30. Create the following links on the **secondary database server only under /usr/lib**

    ln –s /opt/informix/lib/iosm07a.so .

    ln –s /opt/informix/lib/ipldd07a.so .

    ln –s /opt/informix/lib/ismdd07b.so .

5.8 UNPACKING THE METCAST TAR FILE

This section applies to both database and web servers. The METCAST tar file contains the METCAST server and related files, and the APACHE web server. Before completing this section, ensure that the first three steps have already been performed.

Note: Step 1 and 2 are only applicable to the primary server, which has controlled of the RAID.

1. Ensure an apache volume is created on the RAID array and mounted to /opt/apache (See Table 5-1 for details) (Only for database servers)

2. Ensure a metcast volume is created on the RAID array and mounted to /opt/mcsrvr (See Table 5-1 for details)

3. Create a user and group named "web" If the user and group do not exist, use the Solaris admintool utility to create them (to enter admintool, open a terminal and type `admintool <Enter>`). This utility provides a graphical user interface for the creation of groups and users. Create the group web first, then the user web, who is a member of the group web.

   `GID=101`

   `UID=1001`

   `Password=normal`

   `Shell=Bourne shell`

   `HOME dir=/opt/apache`

   `Deselect create home directory check box`

4. Obtain the METCAST tar file from the RC CD (from FNMOC) dated 12 July 1999.

5. While logged in as root, cd to the root directory (Type `cd /<Enter>`)

   Note: You **MUST be ROOT**, and be in the root directory before go to step 6

6. Untar the metcast tar file using the "o" option (Type `tar –xvof /cdrom/cdrom0/RC_1.0.0.8_09-07-99.tar <Enter>)`

7. Type `vi /etc/services` (goto the bottom of the file and add the following 2 lines):

   `mcdb 3926/tcp` #Metcast queries

   `mctk 3927/tcp` #Metcast taker

8. Type vi /etc/inetd.conf (goto the bottom of the file and add the following 2 lines):

   mcdb stream tcp nowait web /opt/mcsrvr/cgi-bin/server server

   mctk stream tcp nowait web /opt/mcsrvr/cgi-bin/taker taker

9. This step is only applicable to the **second** SIPRNET database server

   cd /opt/mcsrvr

rm –R *

cd /opt/apache

rm -R *

5.9 INSTALLING THE APACHE WEB SERVER

This section applies to all servers (Database and Web Servers #1 and #2 and SDBW #1 and #2). The only prerequisite for installation is the completion of section 5.7

1. Create a user and group named "web" If the user and group do not exist, use the Solaris admintool utility to create them (to enter admintool, open a terminal and type `admintool <Enter>`). This utility provides a graphical user interface for the creation of groups and users. Create the group web first, then the user web, who is a member of the group web.

2. Open a terminal window and type `admintool <Enter>.`

3. Set the following parameters for web user and group:

   `GID=101`

   `UID=1001`

   `Password=normal`

   `Shell=Bourne shell`

   `HOME dir=/opt/apache`

   `Deselect create home directory check box`

4. Perform the following steps on both web servers and SDBW #1 and #2.

   (Note: Step 5 thru 14 are only applicable for the primary server, which has controlled of the RAID.)

5. Change to the apache directory: `cd /opt/apache/conf <Enter>.` (

6. Edit the *httpd.conf* file. Find the line starting with ServerName and enter the server name for your installation. For NIPRNET machines, this will be the name of the virtual server (typically the site name, such as nlmoc). For the SIPRNET machines, enter the name of the virtual machine.

7. Type `cd /opt/mcsrvr/etc`

8. Type `chown web:web  htpasswd.channels`

9. Type `chmod 600 htpasswd.channels`

10. Type `cd /opt/mcsrvr/cgi-bin`

11. Type `rm server`

12. Type `ln –s server-cgi-proxy server`

13. Type `rm taker`

14. Type `ln –s taker-cgi-proxy taker`

(Note: Step 15 thru 21 are applicable for both servers)

15. Type `cd /etc`

16. Type `vi hosts`

17. Add "`mcdatabase`" to the end of the line of 10.2.0.63 yoko-dsunu_db

18. Type `cd /`

19. Type `mkdir raid`

20. Type `cd /raid`

21. Type `mkdir htdocs`

(Note: Step 22 thru 25 are applicable to the primary server only, which has controlled of the RAID.)

22. Type `cd /opt/mcsrvr/etc`

23. Type `chmod ugo+x S99*`

24. Type `./S99apache start`

25. To verify that the Web Browser is working, open Web Browser, then type:

    `http://localhost/cgi-bin/mcsrvr/server`

5.10 INSTALLING THE VERITAS FIRSTWATCH WEB AGENT

This section applies only to the SIPRNET web server machines (SDBW #1 and #2). FirstWatch Web Agent will be installed in an asymmetrical configuration (that is, a primary FirstWatch server (SDBW #1) being monitored by a takeover server (SDBW #2), which is running solely to take over the services provided by the primary server in the event of a failure. **FirstWatch Web Agent should be installed first on SDBW #1**. The procedure for installing FirstWatch Web Agent on these machines is as follows:

1. Log in as root.
2. Insert the FirstWatch Web Agent CD-ROM in the CD-ROM drive.
3. Open a terminal window and type `cd /cdrom/cdrom0/pkgs <Enter>`.
4. Type `pkgadd -d . <Enter>` to begin the installation. The program displays the names of the packages.
5. Type `1 <Enter>` to select the FirstWatch Web Agent package. A list of web-server types is displayed.
6. Enter `3 <Enter>` for Apache httpd. The program prompts for the web server root.
7. Enter `/opt/apache <Enter>`. The program will then ask if the information entered so far is correct.
8. On SDBW #1, the line saying "The Web server (httpd) will run in ONLINE_PRIMARY mode:" should end in "Yes", and the line saying "The Web server (httpd) will run in TAKEOVER mode:" should end in "No". On SDBW #2, the responses are reversed. Enter `y <Enter>` if the information is correct.
9. The program will ask whether you want to monitor any more web servers. Enter `q <Enter>` to quit.
10. Type `cd /opt/VRTSfw <Enter>`.
11. Type `cp genericAgent/agentDriver agents/haHttpd <Enter>`.
12. Type `eject cdrom <Enter>` to recover the CD-ROM.
13. Type `cd /opt/VRTSfw/bin <Enter>`.
14. Type `./HAd -kill <Enter>` to kill the FirstWatch instance currently running.
15. Type `./HAd <Enter>` to start a new FirstWatch instance using the new drivers.

16. Repeat steps 1-15 above on SDBW #2.

5.11 INSTALLING METCAST

Before installing METCAST on both NIPRNET database servers and SIPRNET primary database server, ensure that there is an *MCSRVR* partition on the RAID drive, mounted to /opt/MCSRVR [Reference Load Plan].

To install METCAST:

1. You must be logged in as root.

2. If you are installing METCAST on a SIPRNET machine, edit the */opt/VRTSfw/env/ha.env* file. Add a line under PRIMARY_MOUNTS for mcsrvr; the PRIMARY_MOUNTS section should then look like this:

```
PRIMARY_MOUNTS="\
/dev/vx/rdsk/Betty_DG/htdocs /dev/vx/dsk/Betty_DG/htdocs /raid/htdocs,\
/dev/vx/rdsk/Betty_DG/informix /dev/vx/dsk/Betty_DG/informix /opt/informix,\
/dev/vx/rdsk/Betty_DG/apache /dev/vx/dsk/Betty_DG/apache /opt/apache,\
/dev/vx/rdsk/Betty_DG/mtis /dev/vx/dsk/Betty_DG/mtis /opt/MTIS,\
/dev/vx/rdsk/Betty_DG/mcsrvr /dev/vx/dsk/Betty_DG/mcsrvr /opt/mcsrvr";\
export PRIMARY_MOUNTS
```

3. On the other machine of the pair, edit the */opt/VRTSfw/env/ha.env* file and add a line for mcsrvr to the TAKEOVER_MOUNTS section; it should then look like this:

```
TAKEOVER_MOUNTS="\
/dev/vx/rdsk/Betty_DG/htdocs /dev/vx/dsk/Betty_DG/htdocs /raid/htdocs,\
/dev/vx/rdsk/Betty_DG/informix /dev/vx/dsk/Betty_DG/informix /opt/informix,\
/dev/vx/rdsk/Betty_DG/apache /dev/vx/dsk/Betty_DG/apache /opt/apache,\
/dev/vx/rdsk/Betty_DG/mtis /dev/vx/dsk/Betty_DG/mtis /opt/MTIS,\
/dev/vx/rdsk/Betty_DG/mcsrvr /dev/vx/dsk/Betty_DG/mcsrvr /opt/mcsrvr";\
export TAKEOVER_MOUNTS
```

4. Create a link from /h to/opt in the root directory: ln `-s /opt /h <Enter>`

5. Create the grid database (still as user root). Type:
   `Type ksh`
   `Type . ~informix/.profile`
   Type `cd /h/MDGRID/bin <Enter>`
   `Type ./Install <Enter>`

6. The program prompts "Would you like the installer to setup the tablespace and blobspace?" Enter `n <Enter>`. Another prompt says the program is working… and asks if you want to continue. Enter `y <Enter>`.

7. Create the image database (still as user root).

   Type `cd /h/MDIMG/bin <Enter>`

Type `./Install <Enter>`

8. The program prompts "Would you like the installer to setup the tablespace and blobspace?"

   Enter `n <Enter>`. Another prompt says the program is working… and asks if you want to continue. Enter `y <Enter>`.

9. Create the observation databases (still as user root).

   Type `cd /opt/mcsrvr/schema/obs/DDL/ <Enter>`
   Type `./MetcastDB.sh <Enter>`

10. Database MetcastDB will be dropped and re-created. Are you sure? (y/n)
    enter y <Enter>

    Type `cd /opt/mcsrvr/schema/channels/DDL/ <Enter>`

    Type `./MChannels.sh <Enter>`

11. `Database Mchannels will be dropped and re-created. Are you sure? (y/n) Enter y <Enter>.`

12. Installation of METCAST is now complete.

13. Type `vi /etc/services` (goto the bottom of the file and add the following 2 lines):

    `mcdb 3926/tcp` #Metcast queries

    `mctk 3927/tcp` #Metcast taker

14. Type `vi /etc/inetd.conf` (goto the bottom of the file and add the following 2 lines):

    mcdb stream tcp nowait web /opt/mcsrvr/cgi-bin/server server

    mctk stream tcp nowait web /opt/mcsrvr/cgi-bin/taker taker

15. Type `cd /opt/mcsrvr/grids/bin`

16. Type `vi gr_env`

17. Insert the line `export INFORMIXSERVER=yoko_db` (See Configuration sample file in Appendix B)

18. Type `../../imagery/bin`

19. Type `vi im_env` (See Configuration in Appendix B)

20. Type `cd ../../productlist/bin`

21. Type `vi dpl_env` (See Configuration sample file in Appendix B)

22. Type `cd ../../cgi-bin`

23. Type `vi db-util.scm` (See Configuration sample file in Appendix B)

24. Type `ls –l`

25. Verify the following: `server -> server-local`

    `Taker -> taker-local`

26. To load METCAST on the secondary database, perform the following steps:

    a. Obtain the METCAST tar file, either from the web or from CD.

    b. While logged in as root, cd to the root directory (Type `cd /<Enter>`)

    c. Untar the metcast tar file using the "o" option (Type `tar –xvof /cdrom/cdrom0/rc_1007.tar <Enter>`) you **MUST be ROOT**, and be in the root directory for this to work.

    d. Type `cd /opt/apache`

    e. Type `rm –R *`

    f. Type `cd /opt/mcsrvr`

    g. Type `rm –R *`

27. Type `vi /etc/services` (goto the bottom of the file and add the following 2 lines):

    ```
    mcdb 3926/tcp   #Metcast queries
    mctk 3927/tcp       #Metcast taker
    ```

28. Type `vi /etc/inetd.conf` (goto the bottom of the file and add the following 2 lines):

    mcdb stream tcp nowait web /opt/mcsrvr/cgi-bin/server server

mctk stream tcp nowait web /opt/mcsrvr/cgi-bin/taker taker

5.12 INSTALLING MTIS

Note:

- Obtain a proper key code for MTIS before proceed.
- Ensure the following line is added into ha.env file. (See Section 5.11 item 2 for details)
  "/dev/vx/rdsk/Betty_DG/mtis/dev/vx/dsk/Betty_DG/mtis /opt/MTIS,\".

1. Create MTIS user account
   a. User name = mtis
   b. UID = 1004
   c. GID = 104
   d. Path = /h/MTIS/data/web
   e. Shell = c shell
   f. Password = normal
2. Copy MTIS zip from cdrom to directory /opt (Note: your MTIS zip file may be named differently)

   Type cp /cdrom/cdrom0/mtisso~1.gz /opt/
3. Type cd /opt
4. Type /usr/local/bin/gunzip mtisso~1.gz
5. Type mv mtisso~1 mtisso~1.tar (If your file has .tar extension after gunzip, then skip this step)
6. Type tar –xvf mtisso~1.tar
7. Type rm mtisso~1.tar
8. Type cd /h/MTIS/ SegDescrip
9. Type ./CommandLineInstall

10. “CAUTION Invalid entry will disable this software” shown.

11. Type key code here. (Note: proper key code is required. Installation process will terminated if you do not enter the right key code)

12. “Password”. Type your password

13. Move the init.d start-up scripts to the "startup.d" and "takeover.d" dirs.

    a. Primary machine

        i. mv /etc/init.d/mtis-httpd /h/MTIS/bin/mtis-httpd-startup

        ii. mv /etc/init.d/mtis-msqld /h/MTIS/bin/mtis-msqld-startup

        iii. cd /opt/VRTSfw/bin/startup.d/

        iv. ln -s /h/MTIS/bin/mtis-httpd-startup S777mtis-httpd

        v. ln -s /h/MTIS/bin/mtis-msqld-startup S666mtis-msqld

        vi. rm /etc/rc3.d/S777mtis-httpd

        vii. rm /etc/rc3.d/S666mtis-msqld

    b. Secondary machine

        i. cd /opt/ VRTSfw/bin/takeover.d/

        ii. ln -s /h/MTIS/bin/mtis-httpd-startup S777mtis-httpd

        iii. ln -s /h/MTIS/bin/mtis-msqld-startup S666mtis-msqld

14. Ensure crons are running on both machines

    a. Primary should be set

        1) su - mtis

        2) crontab -l

        3) if no jobs present

            a) cd

            b) crontab ../conf/cron_jobs

b. Secondary machine

1) su - mtis

2) cd

3) crontab ../conf/cron_jobs

c. WARNING: Mail file will grow to be "large". May need to disable mail for user "mtis" or limit it in some way

15. vi /h/MTIS/httpd/conf/httpd.conf

a. Add the following lines in the "Listen" section:

1) Listen "mTIS IP":80

b. Modify the "ServerName" line:

1) ServerName "mTIS IP"

16. Reboot servers (primary and secondary)

5.13 STARTUP SCRIPTS

1. This section applies to the primary database server.

a. Type `cd /opt/VRTSfw/bin/startup.d`

b. Type ln –s /opt/mcsrvr/etc/S99mc_decoders S99mc_decoders

c. Type ln –s /opt/mcsrvr/etc/S99apache S99apache

d. Get web data or content files

e. Type `su – web`

f. Type `cd /opt/mcsrvr/etc`

g. Type `crontab crontab.web`

h. Type `exit` to get back to the root

i. To see the contents of the crontab file, type `cd /var/spool/cron/crontabs and view the file as neccessary`

j. Create directory /raid/htdocs for all servers

2. This section applies to the secondary database server.

a. Type `su – web`

b. Type `crontab crontab.web`

c. Type `cd /opt/VRTSfw/bin/takeover.d`

d. Type ln –s /opt/mcsrvr/etc/S99mc_decoders S99mc_decoders

e. Type ln –s /opt/mcsrvr/etc/S99apache S99apache

3. This section applies to the primary and secondary web server

a. Type `cd /etc/rc3.d`

b. Type ln –s /opt/mcsrvr/etc/S99apache S99apache

4. Check on the permission the following directories, they should be 777 and owned by fnmoc user

a. /h/dpsr/grids

b. /h/dpsr/observation

c. /h/dpsr/images

d. /h/dpsr/messages

5.14 INSTALLING METCAST TEXT AND LLT UPDATE

1. cd /dev/vx/rdsk/xxxx_DG

2. chown informix:informix mdllt_db

3. chmod 660 mdllt_db

4. cd /opt/informix/dbspaces
5. ln -s /dev/vx/rdsk/xxxx_DG/mdllt_db mdllt_db
6. su - informix
7. onspaces -c -d mdllt_db -p /opt/informix/dbspaces/mdllt_db -o 0 -s 2048000
8. onbar -b -L0
9. Change user to root and login as root. su
10. ksh
11. . /opt/informix/.profile
12. /h/MDLLT/bin/Install
13. At the prompt: Would you like the installer to setup the tablespaces? [Y/N] prompt type N <Enter>
14. At the Do you wish to continue(Y/N) prompt type Y <Enter>
15. At the Create of MDLLT_DB database successful (Return) prompt type <Enter>
16. cd /h/MDLLT/bin
17. ./Install
18. To install MDTXT
19. /h/MDTXT/bin/Install
20. At the Enter Data Size (MB): prompt type 50
21. At the Enter Pathname (Disk partition) where database space are to reside: prompt type /opt/informix/dbspaces
22. cd /h/MDTXT/bin
23. ./Install
24. su - informix
25. onbar -b -L0

5.15 INSTALLING PING AGENT

1. This section applies to both NIPRNET web servers and primary SIPRNET database server

   a. Type `cd /opt/mcsrvr/etc`

   b. Type `vi pingagent.conf` (See Configuration sample file in Appendix B)

   c. Type `cd /etc/rc3.d`

   d. Type `ln –s /opt/mcsrvr/etc/S99metcast.ha S99metcast.ha`

   e. Type `cd /opt/mcsrvr/etc`

   f. Type `chmod ugo+x ping*`

5.16 WEB MIRRORING

This section applies to the Unclass web servers only. On SIPRNET, these files are on the RAID, and do not get mirrored.

1. On web1u:

   Create a user name “mirror” If the user does not exist, use the Solaris admintool utility to create them (to enter admintool, open a terminal and type `admintool <Enter>`). This utility provides a graphical user interface for the creation of users. Create the user mirror, who is a member of the group web.

2. Open a terminal window and type `admintool <Enter>.`

3. Set the following parameters for mirror user:

   `GID=101`

   `UID=1003`

   `Password=normal`

```
Shell=Bourne shell

HOME dir=/raid/htdocs

Deselect create home directory check box
```

4. On web2u as root, perform the following steps:

   a. Create /opt/web-mirror

   b. cd /opt/web-mirror

   c. copy mirror-2.9.tar.gz into this directory

   d. gunzip mirror-2.9.tar.gz

   e. tar -xvf mirror-2.9.tar

   f. rm mirror-2.9.tar

   g. cp mirror.defaults mirror.org

   h. create new file web1u in /opt/web-mirror (Note the following lines with hostname and password for web1u)

   i. edit mirror.defaults.

   j. chmod 500 web1u (Note: This file has a password for web1u that we do not want everyone to be able to read)

   k. edit cron file for root, type: crontab -e (your default editor will open the file)

      add the following line at the bottom of the file, all one line:
      5,25,45 * * * * /usr/local/bin/perl /opt/web-mirror/mirror.pl /opt/web-mirror/web1u > /dev/null

Note: The set up causes web2u to mirror the /raid/htdocs directory on web1u (including files and subdirectories). Deletions are also duplicated up to 80%, if 80% of the files are deleted a warning will be generated instead of the deletions. The directories created will have the permissions 755 and files 444 owned by user and group 0. A log file is kept in /var/log/web-mirror.log. The cron job is set to occurr at 5, 25 and 45 min past the hour with mail being suppressed.

5.17 MODIFY CRONTAB FILE

1. Type su - web

2. Type EDITOR=vi export EDITOR

3. Type crontab -e

4. The body of the file should be identical to the following text:

```
#
# minute hour day_of_month month day_of_week command
#
# web crontab for Metcast - 03-08-98
# prune image database
1,11,21,31,41,51 * * * * /h/mcsrvr/imagery/bin/im_purge 36 >>
/var/mclogs/imagery_purge
# prune grids database
8 1,13 * * * /h/mcsrvr/grids/bin/gr_prune
# publish XML productlist
0,15,30,45 * * * * /h/mcsrvr/productlist/bin/publish_plist
# display contents of grids database for Web Page
# update every 2 hrs
48 0,2,4,6,8,10,12,14,16,18,20,22 * * *
/h/mcsrvr/grids/bin/Listall
# remove decoder.log file from /var/mclogs every day at midnight
1 0 * * * rm /var/mclogs/decoder.log.*
```

5.18 INSTALLING ADOBE ACROBAT

This section applies all Servers.

The Acrobat software can be downloaded from the web page at http://acrobat.com. To install Acrobat,

1. Obtain the tar file *ar302sol.tar* from Acrobat's web page and copy it to the /bak directory.

2. Uncompress and un-tar the file:

3. `tar -xvf ar302sol.tar <Enter>.`

4. Change to the SSOLR.install directory: `cd /bak/SSOLR.install <Enter>`.

5. At the # prompt, enter: `./install <Enter>`.

6. Follow the screen to `accept and <Enter> twice.`

7. To create a new directory /opt/Acrobat3 enter: y <Enter>.

8. Create a new icon for Acrobat.

5.19 INSTALLING NETSCAPE

1. This section applies all Servers.
2. Log in as root.
3. Insert the Netscape CD-ROM in the CD_ROM drive.
4. Open a terminal window and type: cd /cdrom/cdrom0.
5. Type: cd Netscape-Communicator.
6. Type: cd sparc
7. Type: cd product
8. Type: pkgadd –d . NSCPcom
9. Type: 1 <Enter>.
10. Type: q (quit) <Enter>.

1. Create a new icon for Netscape (See Section 5.12).

5.20 CREATE FNMOC USER ACCOUNT

Note: This user account is for FNMOC to upload data to the database servers.

1. User name = fnmoc
2. UID = 1004
3. GID = 10
4. Path = /h/dpsr
5. Pswd = normal

5.21 CREATE NITES2 USER ACCOUNT

Note: This user account is for HP client to get data from the database servers.

1. User name = nites2
2. UID = 1003
3. GID = 102
4. Path = /opt/nites2
5. Pswd = normal
6. Login Shell=Bourne

5.22 CREATING ICONS

1. Click on “Applications”.
2. Double-Click on “Desktop_Apps”.
3. Double-Click on “Create Action”.
4. Type the “Action Name (icon label)” field.
5. Type the path under the “Command When Action is Opened (Double-clicked)” field.
6. Click on “Find Set” button to select an icon.
7. Double-Click on /usr/dt/appconfig/icon/c .
8. Choose an icon.
9. Click “OK”.
10. Save it, click “OK”.
11. Exit it.
12. Click on Home Folder to go to the File Manager dialog box.
13. Pop up the “Personal Applications” pop up menu.
14. Drag the icon you just created from “File Manager” to “Install Icon” in the “Personal Application’s” Menu.
15. Done.

6 POWER ON/OFF PROCEDURES

This section provide details for powering on the hardware. Upon completion of installing the hardware into the UNCLASS UNIX Data Server Equipment Cabinet (UNIT 4)and the UNCLASS Web Data Server Equipment Cabinet (UNIT 18), power on and power off the hardware in the following order:

6.1 POWER ON PROCEDURES

a. At the UNCLASS UNIX Data Server Equipment Cabinet (UNIT 4), power on Alteon Switch 1 and wait until all indicators light in sequential order.

b. Power on RAID Disk 1 then RAID Disk 2. Verify that all indicators illuminates then extinguishes.

c. Verify that the power LED on both RAID Disks is illuminated.

d. Power on the two power supplies on the RAID Controller.

e. Verify that the power indicator on the RAID Controller is illuminated.

f. Power on the KVM Switch.

g. Press the Ctrl-Alt-1 keys on the keyboard.

h. Verify that the channel one indicator on the KVM Switch is illuminated.

i. Power on the Monitor.

j. Verify that the Monitor's power LED is illuminated.

k. Power on DSUN#1 by turning the key 270 degrees clockwise to its lock position.

l. Verify that the "Welcome to" screen is showing on DSUN#1.

m. Switch to channel two on the KVM Switch by pressing the Ctrl-Alt-2 keys .

n. Verify that the channel two indicator on the KVM Switch is illuminated.

o. Power on DSUN#2 by turning the key 270 degrees clockwise to its lock position.

p. Verify that the "Welcome to" screen is showing on DSUN#2.

q. Switch to channel three on the KVM Switch by pressing the Ctrl-Alt-3 keys.

r. Verify that the channel three indicator on the KVM Switch is illuminated.

s. At the UNCLASS UNIX Web Server Equipment Cabinet (UNIT 18), power on WSUN#1 by turning the key 270 degrees clockwise to its lock position.

t. Verify that the "Welcome to" screen is showing on WSUN#1.

u. Switch to channel four on the KVM Switch by pressing the Ctrl-Alt-4 keys.

v. Verify that the channel four indicator on the KVM Switch is illuminated.

w. Power on WSUN#2 by turning the key 270 degrees clockwise to its lock position.

x. Verify that the "Welcome to" screen is showing on WSUN#2.

y. Power on Alteon Switch 2 and verify that all indicators light in sequential order.

6.2 POWER OFF PROCEDURES

a. To exit the SUN and shutdown your WSUN#2 (Only the System Administrator is allowed to shut down the SUN Server).

b. Ensure that the KVM Switch indicator is set to channel four (Ctrl-Alt-4).

c. At the UNCLASS UNIX Web Server Equipment Cabinet (UNIT 18), if noone is logged into WSUN#2, the following step must be performed (else, goto step b).

    1. The "Welcome to" screen should be displayed, log on by entering your username and password.

d. The user must ensure that all program applications are closed.

e. Open a terminal window.

f. Type `shutdown –h now.`

g. At the {0}ok prompt, leave the power on and switch to WSUN1.

h. Ensure that the KVM Switch indicator is set to channel three (Ctrl-Alt-3).

i. At the UNCLASS UNIX Web Server Equipment Cabinet (UNIT 18), if noone is logged into WSUN#1, the following step must be performed (else, goto step h).

    1. The "Welcome to" screen should be displayed, log on by entering your username and password.

h. The user must ensure that all program applications are closed.

j. Open a terminal window.

k. Type `shutdown –h now.`

l. At the {0}ok prompt, leave the power on and switch to DSUN2.

m. Ensure that the KVM Switch indicator is set to channel two (Ctrl-Alt-2).

n. At the UNCLASS UNIX Data Server Equipment Cabinet (UNIT 4), if noone is logged into DSUN#2, the following step must be performed (else, goto step m).

   1. The “Welcome to” screen should be displayed, log on by entering your username and password.

m. The user must ensure that all program applications are closed.

n. Open a terminal window.

o. Type `/opt/VRTSfw/bin/Hamon`

p. Freeze both servers, DSUN#2 and DSUN#1.

q. Ensure that both servers are in their frozen state.

r. Verify that DSUN#2 shows `LKTKVR`.

s. Type “`E`” to exit the HA Monitor menu.

o. Type `shutdown –h now.`

p. At the {0}ok prompt, leave the power on and switch to DSUN1.

q. Ensure that the KVM Switch indicator is set to channel one (Ctrl-Alt-1).

r. At the UNCLASS UNIX Data Server Equipment Cabinet (UNIT 4), if noone is logged into DSUN#1, the following step must be performed (else, goto step r).

   1. The “Welcome to” screen should be displayed, log on by entering your username and password.

t. The user must ensure that all program applications are closed.

u. Open a terminal window.

v. Type `/opt/VRTSfw/bin/Hamon.`

w. Ensure that both servers are in their frozen state.

x. Verify that DSUN#2 is `LKTKVR`.

y. Set DSUN#1 to `Idle`.

z. Verify that DSUN#1 is `Idle`.

Note: If DSUN#1 does not go into the Idle state, verify that all applications are closed.

aa. Type “E” to exit the HA Monitor menu.

bb. Type `shutdown -h now.`

cc. Power off WSUN#2, WSUN#1, DSUN#2, DSUN#1.

dd. Power off the monitor.

ee. Power off the two power supplies on the RAID Controller.

ff. Power off RAID Disk two and RAID Disk one.

gg. Power off Alteon Switch 2.

hh. Power off Alteon Switch 1.

7 NOTES

7.1 GLOSSARY OF ACRONYMS

ATOS	Applications Transactions Observations Subsystem
FNMOC	Fleet Numerical Meteorology and Oceanography Center
POPS-2U	Primary Oceanographic Prediction System 2-Upgrade
SPAWAR	Space and Naval Warfare Systems Command

IP Address Checklist

NIPRNET

	hostname	**IP Address**	**netmask**
Gateway	gateway	_____	
Domain Name Server		_____	
Proxy Server (if applicable)		_____	
Database servers			
Database Server #1		_____	_____
Database Server #2			
Web Servers			
Web Server #1		_____	_____
Web Server #2		_____	_____
Firewall		_____	_____
Alteon #1			
primary		_____	_____
secondaries (if applicable)		_____	_____
Alteon #2			
primary		_____	_____
secondaries (if applicable)		_____	_____

SIPRNET

Gateway	gateway	_____	
Domain Name Server		_____	
Database and Web Servers		_____	_____
SDBW #1		_____	_____
SDBW #2		_____	_____
Alteon #1	alteon-1	_____	_____
Alteon #2	alteon-2	_____	_____

APPENDIX A

Setup SUN DB server and NT client

(Note: Replace **yoko** with actual name of your system)

1. On the SUN server

   - Ensure informix is installed and worked properly on the SUN
   - vi /opt/informix/etc/sqlhosts
   - add the following line to the end

     online_coe ontlitcp yoko-dsunu_db informix
   - vi /opt/informix/etc/onconfig.yoko
   - find and edit the following line:

     DBSERVERALIASES online_coe # List of alternate dbservernames
   - vi /etc/services
   - find the following line and make sure the second column is read as 2525/tcp

     informix 2525/tcp # informix connect
   - Create a user on the SUN with the same name ad the user on the NITES II that will be accessing the database

     User Name: jms

     User ID: 1006

     Primary Group: 101

     Login Shell: Bourne

     Passeword: Normal Password

     HOME DIRECTORY /

     (Note: Make sure Create Home DIR box is uncheck)

2. On the Windows NT Server

- Edit/WINNT/system32/drivers/etc/hosts. Add a line with the machines ip address and loghost
- Edit/WINNT/system32/drivers/etc/services > the file needs the following line added:

  Informix 2525/tcp # Informix Connect
- Open Programs -> Informix -> Informix Setnet32
- The following are the settings for each tab. You must have administrative privilege to do these settings

  (Note: you should replace your system share IP address of the data base server)

  Click on the Server Informix tab and set the following values:

  Informix Server: online_coe

  HostName: 206.36.231.194

  ProtocolName: olsoctcp

  Service Name: informix

  Click the Make Default Server button

  Click the Host Information tab and set the following values:

  Current Host: 206.36.231.194

  User Name: informix

  Password Option: password

  Password: <password of the informix account on the SUN>

  Click the Apply button

  Click the Environment tab. Highlight the following variables. Set the corresponding values by selecting the value in the pull down menu and click the set button

DBANSIWARN= n

DELIMIDENT= n

INFORMIXDIR= c:\informix

INFORMIXSERVER= online_coe

INFORMIXSQLHOST= loghost

Click the Apply button

Click the OK button

Setup SUN DB server and HP client

(Note: Replace **yoko** with actual name of your system)

1. On the SUN server
   - Ensure informix is installed and worked properly on the SUN
   - vi /opt/informix/etc/sqlhosts
   - add the following line to the end

     online_coe ontlitcp yoko-dsunu_db informix

   - vi /opt/informix/etc/onconfig.yoko
   - find and edit the following line:

     DBSERVERALIASES online_coe # List of alternate dbservernames
   - vi /etc/services
   - find the following line and make sure the second column is read as 2525/tcp

     informix 2525/tcp # informix connect
   - Create a user on the SUN

User Name: nites2

User ID: 1003

Primary Group: 102

Login Shell: Bourne

Passeword: Normal Password

HOME DIRECTORY /opt/nites2

(Note: Make sure Create Home DIR box is uncheck)

- logout current user account and log back in as user of nites2
- vi .rhosts file and add the following line

  nwws1 nites2

2. On the HP server

   - See NITES II VERSION 1.1.0.0 Software Installation Plan (SIP), Section 4.7 for Informix Client Segment Installation details. Ensure in step 7 entering the correct Hostname and Share IP Address of the SUN (ie. yoko-dsunu_db)
   - To modify IP address or hostname, edit the sqlhosts and hosts files

     vi /opt/informix/etc/sqlhosts

     The file should contain a following line:

     online_coe olsoctcp yoko-dsunu_db informix

     vi /etc/hosts

     Use the share IP address of the SUN in the hosts file

     i.e. 206.36.231.194 yoko-dsunu_db n1srvr

DO NOT SEE GRIDS, IMAGES, OR OBSERVATIOS DATA COMING FROM FNMOC

1. Make sure informix is running

- On the active SUN server, which has controlled of the RAID, activate the Hamon

  /opt/VRTSfw/bin/Hamon

- Select A for Agent Informix
- Select the option of the active SUN server (i.e. select A for yoko-dsun1u)
- If Informix is running, you should see something like:

  [01] haInformix: PID 545-"Monitor Informix Online Server yoko_db" Informix Server "yoko-dsun_db" is okay

2. To check for grids, images, and observations:

   - cd /var/mclogs
   - tail -50 restartdecoders.log
   - If they are running, you should see a similarly list

     sleeping 10 minutes

     yoko-dsun1u

     Tue Jun 29 16:15:56 GMT 1999

     Informix is running

     Grib decoder is running

     Imagery decoder is running

     Obs decoder is running

3. If you do not see all three decoders running, here are some of possible causes:

   - Normally all grid, observation, imagery, and message data are pushed into the SUN under directories of /h/data/local/MCSRVR/data/grids; /h/data/local/MCSRVR/data/obs; /h/data/local/MCSRVR/data/images; and /h/data/local/MCSRVR/data/messages accordingly. Grid, observation, imagery, and message decoders of the SUN server are looking in /h/dpsr/grids; /h/dpsr/observation; /h/dpsr/images; and /h/dpsr/messages for data accordingly. Therefore, they must be linked to each other.

     ln -s /h/data/local/MCSRVR/data/grids /h/dpsr/grids

     ln -s /h/data/local/MCSRVR/data/obs /h/dpsr/observation

ln -s /h/data/local/MCSRVR/data/images /h/dpsr/images

ln -s /h/data/local/MCSRVR/data/message /h/dpsr/messages

- Check on the permission the following directories, they should be 777

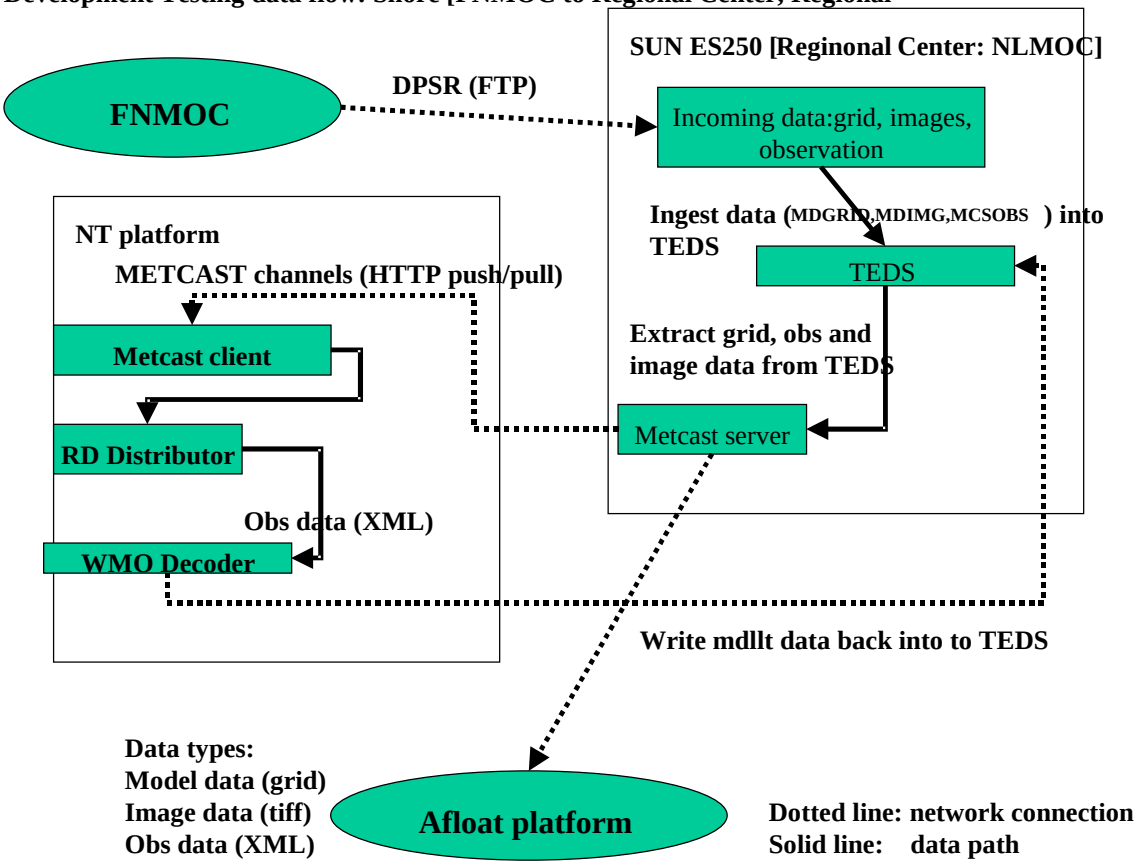
  /h/dpsr/grids

  /h/dpsr/observation

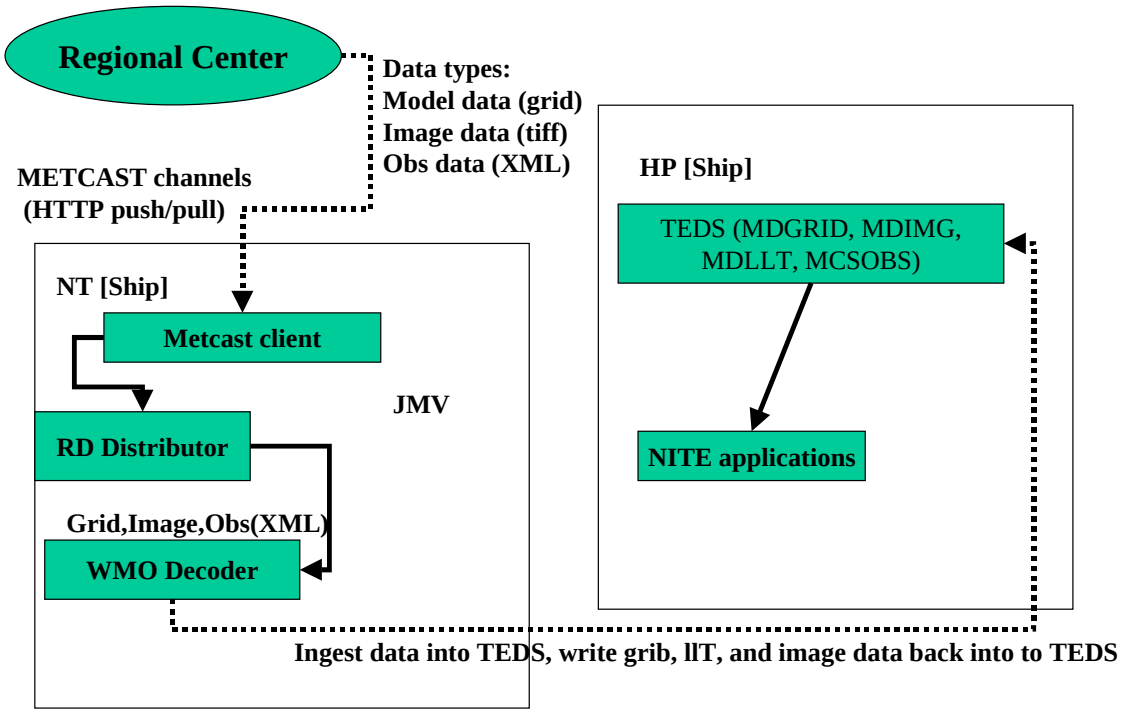
  /h/dpsr/images

  /h/dpsr/messages

Development Testing data flow: Shore [FNMOC to Regional Center, Regional



Development Testing: Afloat [Regional Center to Ship]



Dotted line: network connection
Solid line: data path

APPENDIX B

Configuration Sample Files

1. .profile configuration sample file

```
export INFORMIXDIR=/opt/informix
export INFORMIXSERVER=yyyy_db
PATH=${PATH}:/opt/informix/bin
export ONCONFIG=onconfig.xxxx
```

2. onconfig.xxxx configuration sample file

```
#**************************************************************************
****
#
#                     INFORMIX SOFTWARE, INC.
#
#  Title:   onconfig.std
#  Description: Informix Dynamic Server Configuration Parameters
#
#**************************************************************************
****

# Root Dbspace Configuration

ROOTNAME        rootdbs         # Root dbspace name
ROOTPATH        /opt/informix/dbspaces/rootdbs
                                # Path for device containing root
dbspace KGD
ROOTOFFSET      0               # Offset of root dbspace into device
(Kbytes)
ROOTSIZE        200000          # Size of root dbspace (Kbytes) KGD

# Disk Mirroring Configuration Parameters

MIRROR          0               # Mirroring flag (Yes = 1, No = 0)
MIRRORPATH                      # Path for device containing mirrored
root
MIRROROFFSET    0               # Offset into mirrored device (Kbytes)

# Physical Log Configuration

PHYSDBS         physlog         # Location (dbspace) of physical log
PHYSFILE        10000           # Physical log file size (Kbytes)

# Logical Log Configuration

LOGFILES        6               # Number of logical log files
LOGSIZE         500             # Logical log size (Kbytes)

# Diagnostics
```

```
MSGPATH         /opt/informix/online.log # System message log file path
KGD
CONSOLE         /dev/null    # System console message path
ALARMPROGRAM    /opt/informix/etc/log_full.sh # Alarm program path KGD
SYSALARMPROGRAM /opt/informix/etc/evidence.sh # System Alarm program
path DGD
TBLSPACE_STATS  1

# System Archive Tape Device

TAPEDEV         /dev/null       # Tape device path KGD
TAPEBLK         16              # Tape block size (Kbytes)
TAPESIZE        10240           # Maximum amount of data to put on tape
(Kbytes)

# Log Archive Tape Device

LTAPEDEV        /dev/null       # Log tape device path KGD
LTAPEBLK        16              # Log tape block size (Kbytes)
LTAPESIZE       10240           # Max amount of data to put on log tape
(Kbytes)

# Optical

STAGEBLOB                       # Informix Dynamic Server/Optical
staging area

# System Configuration

SERVERNUM       6               # Unique id corresponding to a Dynamic
Server instance KGD
DBSERVERNAME    yyyy_db         # Name of default database server KGD
DBSERVERALIASES   online_coe                # List of alternate
dbservernames
DEADLOCK_TIMEOUT 60              # Max time to wait of lock in
distributed env.
RESIDENT        0               # Forced residency flag (Yes = 1, No =
0)

MULTIPROCESSOR  0               # 0 for single-processor, 1 for multi-
processor
NUMCPUVPS       1               # Number of user (cpu) vps
SINGLE_CPU_VP   0               # If non-zero, limit number of cpu vps
to one

NOAGE           0               # Process aging
AFF_SPROC       0               # Affinity start processor
AFF_NPROCS      0               # Affinity number of processors

# Shared Memory Parameters

LOCKS           20000            # Maximum number of locks
BUFFERS         5000            # Maximum number of shared buffers KGD
NUMAIOVPS                       # Number of IO vps
PHYSBUFF        32              # Physical log buffer size (Kbytes)
LOGBUFF         32              # Logical log buffer size (Kbytes)
```

```
LOGSMAX         6               # Maximum number of logical log files
CLEANERS        1               # Number of buffer cleaner processes
SHMBASE         0xa000000         # Shared memory base address
SHMVIRTSIZE     8000            # initial virtual shared memory segment
size
SHMADD          8192            # Size of new shared memory segments
(Kbytes)
SHMTOTAL        0               # Total shared memory (Kbytes).
0=>unlimited
CKPTINTVL       300             # Check point interval (in sec)
LRUS            8               # Number of LRU queues
LRU_MAX_DIRTY   60              # LRU percent dirty begin cleaning
limit
LRU_MIN_DIRTY   50              # LRU percent dirty end cleaning limit
LTXHWM          50              # Long transaction high water mark
percentage
LTXEHWM         60              # Long transaction high water mark
(exclusive)
TXTIMEOUT       0x12c             # Transaction timeout (in sec)
STACKSIZE       32              # Stack size (Kbytes)

# System Page Size
# BUFFSIZE - Dynamic Server no longer supports this configuration
parameter.
#            To determine the page size used by Dynamic Server on your
platform
#            see the last line of output from the command, 'onstat -b'.


# Recovery Variables
# OFF_RECVRY_THREADS:
# Number of parallel worker threads during fast recovery or an offline
restore.
# ON_RECVRY_THREADS:
# Number of parallel worker threads during an online restore.

OFF_RECVRY_THREADS 10             # Default number of offline worker
threads
ON_RECVRY_THREADS 1               # Default number of online worker
threads

# Data Replication Variables
# DRAUTO: 0 manual, 1 retain type, 2 reverse type
DRAUTO          0               # DR automatic switchover
DRINTERVAL      30              # DR max time between DR buffer flushes
(in sec)
DRTIMEOUT       30              # DR network timeout (in sec)
DRLOSTFOUND     /opt/informix/etc/dr.lostfound # DR lost+found file
path

# CDR Variables
CDR_LOGBUFFERS  2048            # size of log reading buffer pool
(Kbytes)
CDR_EVALTHREADS 1,2             # evaluator threads (per-cpu-
vp,additional)
CDR_DSLOCKWAIT  5               # DS lockwait timeout (seconds)
```

```
CDR_QUEUEMEM    4096            # Maximum amount of memory for any CDR
queue (Kbytes)

# Backup/Restore variables
BAR_ACT_LOG     /tmp/bar_act.log
BAR_MAX_BACKUP  0
BAR_RETRY       1
BAR_NB_XPORT_COUNT 10
BAR_XFER_BUF_SIZE 31

# Informix Storage Manager variables
ISM_DATA_POOL   ISMData         # If the data pool name is changed, be
sure to
                        # update $INFORMIXDIR/bin/onbar.  Change to
                        # ism_catalog -create_bootstrap -pool <new
name>
ISM_LOG_POOL    ISMLogs

# Read Ahead Variables
RA_PAGES                        # Number of pages to attempt to read
ahead
RA_THRESHOLD                    # Number of pages left before next
group

# DBSPACETEMP:
# Dynamic Server equivalent of DBTEMP for SE. This is the list of
dbspaces
# that the Dynamic Server SQL Engine will use to create temp tables
etc.
# If specified it must be a colon separated list of dbspaces that exist
# when the Dynamic Server system is brought online.  If not specified,
or if
# all dbspaces specified are invalid, various ad hoc queries will
create
# temporary files in /tmp instead.

DBSPACETEMP                     # Default temp dbspaces

# DUMP*:
# The following parameters control the type of diagnostics information
which
# is preserved when an unanticipated error condition (assertion
failure) occurs
# during Dynamic Server operations.
# For DUMPSHMEM, DUMPGCORE and DUMPCORE 1 means Yes, 0 means No.

DUMPDIR         /tmp            # Preserve diagnostics in this
directory
DUMPSHMEM       1               # Dump a copy of shared memory
DUMPGCORE       0               # Dump a core image using 'gcore'
DUMPCORE        0               # Dump a core image (Warning:this
aborts Dynamic Server)
DUMPCNT         1               # Number of shared memory or gcore
dumps for
                        # a single user's session

FILLFACTOR      90              # Fill factor for building indexes
```

```
# method for Dynamic Server to use when determining current time
USEOSTIME       0               # 0: use internal time(fast), 1: get
time from OS(slow)

# Parallel Database Queries (pdq)
MAX_PDQPRIORITY 100             # Maximum allowed pdqpriority
DS_MAX_QUERIES                  # Maximum number of decision support
queries
DS_TOTAL_MEMORY                 # Decision support memory (Kbytes)
DS_MAX_SCANS    1048576         # Maximum number of decision support
scans
DATASKIP        off             # List of dbspaces to skip

# OPTCOMPIND
# 0 => Nested loop joins will be preferred (where
#      possible) over sortmerge joins and hash joins.
# 1 => If the transaction isolation mode is not
#      "repeatable read", optimizer behaves as in (2)
#      below.  Otherwise it behaves as in (0) above.
# 2 => Use costs regardless of the transaction isolation
#      mode.  Nested loop joins are not necessarily
#      preferred.  Optimizer bases its decision purely
#      on costs.
OPTCOMPIND      2               # To hint the optimizer

ONDBSPACEDOWN   2               # Dbspace down option: 0 = CONTINUE, 1
= ABORT, 2 = WAIT
LBU_PRESERVE    0               # Preserve last log for log backup
OPCACHEMAX      0               # Maximum optical cache size (Kbytes)

# HETERO_COMMIT (Gateway participation in distributed transactions)
# 1 => Heterogeneous Commit is enabled
# 0 (or any other value) => Heterogeneous Commit is disabled
HETERO_COMMIT   0

# Optimization goal: -1 = ALL_ROWS(Default), 0 = FIRST_ROWS
OPT_GOAL        -1

# Optimizer DIRECTIVES ON (1/Default) or OFF (0)
DIRECTIVES      1

# Status of restartable restore
RESTARTABLE_RESTORE off
```

3. sqlhosts configuration sample file

```
#*************************************************************************
****
#
#                     INFORMIX SOFTWARE, INC.
#
#                        PROPRIETARY DATA
#
#     THIS DOCUMENT CONTAINS TRADE SECRET DATA WHICH IS THE PROPERTY OF
```

```
#     INFORMIX SOFTWARE, INC.  THIS DOCUMENT IS SUBMITTED TO RECIPIENT
IN
#     CONFIDENCE.  INFORMATION CONTAINED HEREIN MAY NOT BE USED, COPIED
OR
#     DISCLOSED IN WHOLE OR IN PART EXCEPT AS PERMITTED BY WRITTEN
AGREEMENT
#     SIGNED BY AN OFFICER OF INFORMIX SOFTWARE, INC.
#
#     THIS MATERIAL IS ALSO COPYRIGHTED AS AN UNPUBLISHED WORK UNDER
#     SECTIONS 104 AND 408 OF TITLE 17 OF THE UNITED STATES CODE.
#     UNAUTHORIZED USE, COPYING OR OTHER REPRODUCTION IS PROHIBITED BY
LAW.
#
#
#   Title:  sqlhosts.demo
#   Sccsid: @(#)sqlhosts.demo 9.2   7/15/93  15:20:45
#   Description:
#           Default sqlhosts file for running demos.
#
#*************************************************************************
****

#demo_on    onipcshm    on_hostname on_servername KGD
#demo_se    seipcpip    se_hostname sqlexec KGD

# Added this line KGD
yyyy_db           onipcshm    yoko-dsunu_db     informix
online_coe        ontlitcp    yoko-dsunu_db     informix
```

4. gr_env configuration sample file

```
#!/bin/ksh
#########################################################
# Set the Top Two for where to put the Log Files
# MCSRVR_HOME_ENV - Directory for Log Files
# MCSRVR_HTML_ENV - Directory for Web Page Files
#########################################################
#####   LOCAL   ###################################
#export MCSRVR_GRIDBUILD_DIR=/export/home/dreksler/MCSRVR/gridseg
#export MCSRVR_HOME_ENV=$MCSRVR_GRIDBUILD_DIR/log
#export MCSRVR_HTML_ENV=$MCSRVR_HOME_ENV/html
#export MCSRVR_GRID_DATA_DIR=$MCSRVR_GRIDBUILD_DIR/data
#####   WEB     ###################################
export MCSRVR_GRIDBUILD_DIR=/h/mcsrvr/grids
export  MCSRVR_HOME_ENV=/var/mclogs/grids
export  MCSRVR_HTML_ENV=$MCSRVR_HOME_ENV/html
export MCSRVR_GRID_DATA_DIR=$MCSRVR_GRIDBUILD_DIR/data
#########################################################
# Set These for Teds and Source Code #
#########################################################
export MCSRVR_TEDS_DIR=/h/MAGRID
#################################################
export INFORMIXDIR=/opt/informix
export PATH=$PATH:$INFORMIXDIR/bin
```

```
export INFORMIXSERVER=yyyy_db    #KGD
export TZ=GMT0
export MCSRVR_REDALERT=$MCSRVR_HOME_ENV/redalert.dec
export MCSRVR_TEDS_HOST=local
export MCSRVR_HOURLY_INC=12
export MCSRVR_GRIBING=$MCSRVR_HOME_ENV/gribIng.log
export MCSRVR_STDERR_ON=on
export LD_RUN_PATH=/h/MAGRID/bin:$INFORMIXDIR/lib:$INFORMIXDIR/lib/esql
export LD_LIBRARY_PATH=$LD_RUN_PATH
################################################
```

5. im_env configuration sample file

```
#MCSRVR Imagery Environment Variables
#
#Non-DII Base config
export INFORMIXDIR=/opt/informix

#this line need to comment out
#export ONCONFIG=onconfig.devatos
#

#change to share server name
export INFORMIXSERVER=dsunu_db
#

export MCSRVR_IM_BIN=/opt/mcsrvr/imagery/bin
export MCSRVR_IM_INGEST_LOG=/var/mclogs/imagery_ingest
export MCSRVR_IM_EXTRACT_LOG=/var/mclogs/imagery_requests
export MCSRVR_IM_DATA=/opt/dpsr/images
MCSRVR_IM_MAIMG_DIR=/h/MAIMG/bin

export PATH=${PATH}:${INFORMIXDIR}/bin
export
LD_LIBRARY_PATH=/usr/lib:/lib:/usr/openwin/bin:$INFORMIXDIR/lib:$INFORM
IXDIR/lib/esql:$MCSRVR_IM_MAIMG_DIR
#end im_env.base
#begin im_env.body
#empty body
#end im_env.body
```

6. dpl_env configuration sample file

```
#!/bin/ksh
#
#Dynamic Product List Environment
#Baseline Non-DII Configuration
#

#The program to run for imagery:
export MCSRVR_DPL_IM=/h/mcsrvr/imagery/bin/im_index

#The program to run for grids:
```

```
export MCSRVR_DPL_GR=/h/mcsrvr/grids/bin/gr_index

#where to log:
export MCSRVR_DPL_LOG=/var/mclogs/dpl_log

#the server URL for the file
export SERVER_URL=http://www.yoko.npmoc.navy.mil/cgi-bin/mcsrvr/server
# KGD


export INFORMIXDIR=/opt/informix

export INFORMIXSERVER=yyyy_db  # KGD

#end of dpl_env.dii_base

#end of dpl_env.base
#Begin dpl_env.body
#except that it's empty
#end dpl_env.body
```

7. db-util.scm configuration sample file

```
;-------------------------------------------------------------------------
--
;                 Database access tools
;
; A major procedure: DB:for-each PROC STRING1...
; A major procedure: DB:for-each (PROC-INIT . PROC) STRING1...
;
; STRING1 (and the following strings, if any) are concatenated together
; to form a SELECT statement. PROC is a procedure that takes as many
; arguments as the number of columns in the the table that SELECT
statement
; is expected to return. The query statement is executed, and the PROC
; is applied to each returned row in turn. The values produced by
successive
; evaluations of PROC are returned in a list. To be more precise:
; If the procedure PROC returns
;     - #f, the execution of DB:for-each is terminated
;     - '(), the execution continues, but nothing is appended to the
;       list-result from DB:for-each
;     - everything else gets appended to the list
; If the query yields no rows, PROC is never called, and DB:for-each
; returns #f.
; In the second format, a PROC-INIT is a thunk that is called once
; before the first application of PROC (that is, before the first
; retrieved row is processed). The result of PROC-INIT is disregarded.
; If the query yields no rows, neither PROC nor PROC-INIT are called.
;
; Thus DB:for-each is similar to the for-each/map primitive. In fact,
it
; was inspired by OS:for-each-file-in-directory.
;
; There are a few minor variants of the above procedure, optimized
```

```
; for common particular cases:
;
; A minor procedure: DB:for-singleton PROC STRING1...
; STRING1 (and the following strings, if any) are concatenated together
; to form a SELECT statement that is expected to return a table of at
; most one row. PROC is a procedure that takes as many arguments as the
; number of columns in that table. If the query returns a non-empty
; table, PROC is applied to the singleton row. The result from the PROC
is
; returned. If the query yields an empty table, the DB:for-singleton
function
; returns #f.
;
; A minor procedure: DB:assoc-val STRING1...
; STRING1 (and the following strings, if any) are concatenated together
; to form a SELECT statement that is expected to return at most one
data
; value (that is, a table of at most one row and exactly one column).
; The statement is executed and the value it yields is returned. If the
; query returns no value, the procedure returns #f. Note _this_
particular
; function does not distinguish between a query yielding no value and a
query
; that yields a FALSE value. You need to use a more general DB:for-
singleton
; above if this distiction is important.
;
; A minor procedure: DB:imperative-stmt STRING1...
; STRING1 (and the following strings, if any) are concatenated together
; to form a DDL or DML statement(s) (like INSERT, UPDATE) that are not
expected
; to return any value. Several statements (each terminated with semi-
colons)
; may be submitted this way, via a single invocation of DB:imperative-
stmt.
; The statements are submitted to the database server, and the
procedure
; returns immediately after that. The server executes the statements
; concurrently, which may take quite a while. Again, the procedure does
_not_
; wait for the server to finish processing of the statement(s).
;
;
; $Id: db-util.scm,v 2.8 1998/10/28 21:55:27 oleg Exp oleg $


;(declare
; (block)
; (standard-bindings)
; (fixnum)
;)

;(##include "myenv.scm") ; include target dependent stuff


;; ;POOL; tag comments out pieces of code that enable database
; connection pooling
```

```
            ; Configuration parameters,
            ; Note: DB:PIPE-TO-SQL, DB:PIPE-FROM-SQL, DB:INIT-STRING
            ; may have been
            ; already defined. In that case, they retain their
            ; old value
;; ;POOL; (define DB:PIPE-TO-SQL
;; ;POOL;   (if (string? (##global-var-ref 'DB:PIPE-TO-SQL)) DB:PIPE-
TO-SQL
;; ;POOL;    "/tmp/sql-to"))
;; ;POOL;(define DB:PIPE-FROM-SQL
;; ;POOL;  (if (string? (##global-var-ref 'DB:PIPE-FROM-SQL)) DB:PIPE-
FROM-SQL
;; ;POOL;    "/tmp/sql-from"))
;; ;POOL-else+;
(define DB:PIPE-FROM-SQL (OS:int->sprintf "/tmp/sql-from.%d"
(OS:getpid)))
(define DB:output-port #f)    ; will be opened in an INIT section below
;; ;POOL-else-;

(define DB:INIT-STRING
  (if (string? (##global-var-ref 'DB:INIT-STRING)) DB:INIT-STRING
    "SET LOCK MODE to WAIT; SET ISOLATION to COMMITTED READ;"))
(define DB:NAME         ; A db to query
  (if (string? (##global-var-ref 'DB:NAME)) DB:NAME
    "MetcastDB"))

            ; see also below about PATH, etc. information needed
            ; to launch dbaccess

(define DB:TIMEOUT 600)       ; The number of second after which a
                        ; query times out. Should be big enough
                        ; to survive the db checkpoint

;; ;POOL; (define DB:LOCK-FILE (string-append DB:PIPE-TO-SQL ".lock"))


      ; Run a given SQL statement through the database, and
      ; return the result as a list of tokens;
      ; We assume that different fields in the SQL output are
      ; separated with a character '|'. Informix's dbaccess also
      ; adds '|' after the last field of a row, right before
      ; the newline terminating a row.
(define (DB:for-each procs stmt1 . stmt-others)
  (let ((proc (if (pair? procs) (cdr procs) procs))
        (proc-init (and (pair? procs) (car procs))))
;; ;POOL;  (OS:within-critical-section DB:LOCK-FILE
;; ;POOL;    (lambda ()
;; ;POOL;      (call-with-output-file DB:PIPE-TO-SQL
;; ;POOL;        (lambda (port) xxx))))
          (display "unload to " DB:output-port)
          (display DB:PIPE-FROM-SQL DB:output-port)
          (display " delimiter '|' " DB:output-port)
          (display stmt1 DB:output-port)
          (for-each (lambda (stmt) (display stmt DB:output-port)) stmt-
others)
;; ;POOL-else+;
```

```
          (flush-output DB:output-port)
          (OS:within-timeout DB:TIMEOUT
            (lambda ()
          (with-input-from-file DB:PIPE-FROM-SQL
            (lambda ()
;      (do ((c (read-char) (read-char))) ((eof-object? c)) (write-char
c))
          (let loop ((result '()) (curr-row '()))
            (cond
              ((eof-object? (peek-char))
                (and (pair? result) (reverse result)))
              (else
                (let ((new-token (next-token '() '(#\|))))
                  (assert-curr-char '(#\|) "DB:for-each new token")
                  (cond
                    ((char=? (peek-char) #\newline)
                      (read-char)         ; consume the newline
                      (and proc-init
                        (begin (proc-init) (set! proc-init #f)))
                      (let ((proc-result
                            (apply proc (reverse (cons new-token curr-
row)))))
                        (cond
                          ((null? proc-result)
                            (loop result '()))
                          (proc-result
                            (loop (cons proc-result result) '()))
                          (else
                            (skip-until '(*eof*))
                            (loop result '()))))))
                    (else
                      (loop result (cons new-token curr-row))))))
              ))))))


      ; A variant of the previous function, in a case when we expect
      ; at most one row in the result
(define (DB:for-singleton proc stmt1 . stmt-others)
;; ;POOL;  (OS:within-critical-section DB:LOCK-FILE
;; ;POOL;    (lambda ()
;; ;POOL;      (call-with-output-file DB:PIPE-TO-SQL
;; ;POOL;        (lambda (port) xxx))))
          (display "unload to " DB:output-port)
          (display DB:PIPE-FROM-SQL DB:output-port)
          (display " delimiter '|' " DB:output-port)
          (display stmt1 DB:output-port)
          (for-each (lambda (stmt) (display stmt DB:output-port)) stmt-
others)
;; ;POOL-else+;
          (flush-output DB:output-port)
          (OS:within-timeout DB:TIMEOUT
            (lambda ()
          (with-input-from-file DB:PIPE-FROM-SQL
            (lambda ()
;      (do ((c (read-char) (read-char))) ((eof-object? c)) (write-char
c))
          (and (not (eof-object? (peek-char)))
```

```
            (let loop ((columns '()))
              (let ((new-token (next-token '() '(#\|))))
                (assert (eq? #\| (read-char)))
                (case (peek-char)
                  ((#\newline)
                    (read-char)
                    (assure (eof-object? (read-char))
                      "Only one row is expected from the query ")
                    (apply proc (reverse (cons new-token columns))))
                  (else
                    (loop (cons new-token columns))))))
))))))


      ; A variant of the previous function, in a case when we expect
      ; at most one row in the result

(define (DB:assoc-val stmt1 . stmt-others)
;; ;POOL;  (OS:within-critical-section DB:LOCK-FILE
;; ;POOL;    (lambda ()
;; ;POOL;      (call-with-output-file DB:PIPE-TO-SQL
;; ;POOL;        (lambda (port) xxx))))
          (display "unload to " DB:output-port)
          (display DB:PIPE-FROM-SQL DB:output-port)
          (display " delimiter '|' " DB:output-port)
          (display stmt1 DB:output-port)
          (for-each (lambda (stmt) (display stmt DB:output-port)) stmt-
others)
;; ;POOL-else+;
          (flush-output DB:output-port)
          (OS:within-timeout DB:TIMEOUT
            (lambda ()
          (with-input-from-file DB:PIPE-FROM-SQL
            (lambda ()
;      (do ((c (read-char) (read-char))) ((eof-object? c)) (write-char
c))
          (and (not (eof-object? (peek-char)))
            (begin0
              (next-token '() '(#\|))
                (assert (eq? #\| (read-char)))
                (assure (eq? #\newline (read-char))
                  "DB:assoc-val: only one-column table expected")
                (assure (eof-object? (read-char))
                  "DB:assoc-val: only singleton table expected")
                )))
))))


      ; A variation of the previous function, in a case when we expect
      ; no result at all (as from DDL or UPDATE/INSERT statements)
(define (DB:imperative-stmt stmt1 . stmt-others)
;; ;POOL;  (OS:within-critical-section DB:PIPE-TO-SQL
;; ;POOL;    (lambda ()
;; ;POOL;      (call-with-output-file DB:PIPE-TO-SQL
;; ;POOL;        (lambda (port) xxx))))
          (display stmt1 DB:output-port)
```

```
          (for-each (lambda (stmt) (display stmt DB:output-port)) stmt-
others)
;; ;POOL-else+;
          (flush-output DB:output-port)
)



;; ;POOL;         ; Launching an SQL middle-server if necessary
;; ;POOL;(when (not (OS:file-exists? DB:PIPE-TO-SQL))
;; ;POOL;  (OS:remove DB:PIPE-TO-SQL)
;; ;POOL;  (OS:remove DB:PIPE-FROM-SQL)
;; ;POOL;;  (OS:system "kill -1 `UNIX95=1 ps -C dbaccess -o pid=` 2>>
/tmp/log")
;; ;POOL;  (OS:putenv "INFORMIXDIR" "/opt/informix")
;; ;POOL;  (OS:putenv "INFORMIXSERVER" "yyyy_db")
;; ;POOL;  (OS:putenv "PATH"
;; ;POOL;    (string-append "/opt/informix/bin:" (or (OS:getenv "PATH")
""")))
;; ;POOL;  (OS:system "/etc/mknod " DB:PIPE-TO-SQL " p ")
;; ;POOL;  (OS:system "/etc/mknod " DB:PIPE-FROM-SQL " p ")
;; ;POOL;  (OS:system "/usr/local/bin/exec_with_piped " DB:PIPE-TO-SQL
;; ;POOL;      " 'dbaccess -e " DB:NAME " - ' >> /tmp/log 2>&1 &")
;; ;POOL;  (DB:imperative-stmt DB:INIT-STRING)
;; ;POOL;)

            ; Opening a connection to the database
(let ()
  (OS:system "/bin/rm -f " DB:PIPE-FROM-SQL
    "; /etc/mknod " DB:PIPE-FROM-SQL " p ")
  (OS:remove-at-exit DB:PIPE-FROM-SQL)
  (OS:putenv "INFORMIXDIR" "/opt/informix")
  (OS:putenv "INFORMIXSERVER" "yyyy_db")
  (OS:putenv "DBACCNOIGN" "1")
  (OS:putenv "PATH"
    (string-append "/opt/informix/bin:" (or (OS:getenv "PATH") "")))
  (set! DB:output-port
    (open-output-file
      (string-append "| dbaccess -e " DB:NAME " - 1>&2 ")))
  (DB:imperative-stmt DB:INIT-STRING)
)

      ; An SQL buffer object, to accumulate parts of a SQL statement
      ; The object contains the buffer that is a reverse list of
strings
      ; that make up an SQL statement
      ; The object responds to the following messages
      ; 'accum-sql!
      ;    adds one or more phrases to the accumulated SQL statement
parts
      ; dump
      ;    debug printing
      ; 'exec proc-handler
      ;   finishes the statement (appending a ';') and runs it,
returning
      ;   the result
```

```
(define (DB:make-sql-stmt-buffer . init-strings)
  (let ((sql-parts (reverse init-strings)))

    (define (accumulate! phrases)
      (for-each
      (lambda (phrase)
        (set! sql-parts (cons phrase sql-parts)))
      phrases))

    (define (run-stmt handler)
      (apply DB:for-each (cons handler (reverse (cons ";" sql-
parts)))))


            ; message dispatcher
    (lambda (selector . args)
      (case selector
        ((accum-sql!) (accumulate! args))
        ((dump) (cerr "SQL parts accumulated so far" (reverse sql-
parts)))
        ((exec) (apply run-stmt args))
        (else
          (error "make-sql-stmt-buffer does not understand "
selector))))
))
```

8. ha.env configuration sample file

```
# @(#)@(#)arch/solaris/scripts/ha.env     1.1.1.2 08/18/97 14:29:31
# @(#)@(#)
#ident  "@(#)/project/fw/arc/arch/solaris/scripts/s.ha.env 1.1.1.2 "

# Copyright(C)1996 VERITAS Software Corporation.  ALL RIGHTS RESERVED.
# UNPUBLISHED -- RIGHTS RESERVED UNDER THE COPYRIGHT
# LAWS OF THE UNITED STATES.  USE OF A COPYRIGHT NOTICE
# IS PRECAUTIONARY ONLY AND DOES NOT IMPLY PUBLICATION
# OR DISCLOSURE.
#
# THIS SOFTWARE CONTAINS CONFIDENTIAL INFORMATION AND
# TRADE SECRETS OF VERITAS SOFTWARE.  USE, DISCLOSURE,
# OR REPRODUCTION IS PROHIBITED WITHOUT THE PRIOR
# EXPRESS WRITTEN PERMISSION OF VERITAS SOFTWARE.
#
#               RESTRICTED RIGHTS LEGEND
# USE, DUPLICATION, OR DISCLOSURE BY THE GOVERNMENT IS
# SUBJECT TO RESTRICTIONS AS SET FORTH IN SUBPARAGRAPH
# (C) (1) (ii) OF THE RIGHTS IN TECHNICAL DATA AND
# COMPUTER SOFTWARE CLAUSE AT DFARS 252.227-7013.
#               VERITAS SOFTWARE
# 1600 PLYMOUTH STREET, MOUNTAIN VIEW, CA 94043
#

# Note to FirstWatch users prior to release 2.2.3.
#
```

```
#     In releases prior to FirstWatch 2.2.3, users could place the
#     following variables in the /etc/ha.conf file:
#
#           NFS
#           NIS_CLIENT
#           NUM_NFSD
#           ODS
#           ODS_METASETS_P
#           ODS_METASETS_T
#           PRIMARY_INTERFACES
#           PRIMARY_MOUNT_OPTIONS
#           PRIMARY_MOUNTS
#           PRIMARY_ROUTES
#           PRIMARY_SHARE_OPTIONS
#           TAKEOVER_INTERFACES
#           TAKEOVER_MOUNT_OPTIONS
#           TAKEOVER_MOUNTS
#           TAKEOVER_ROUTES
#           TAKEOVER_SHARE_OPTIONS
#           VXVM
#           VXVM_DSKGRPS_P
#           VXVM_DSKGRPS_T
#
#     These variables can remain in ha.conf but it is important to
note:
#
#     - If identical variables are stored in both ha.env and ha.conf,
#       the values stored in /etc/ha.conf will be ignored.
#
#     - New ha.env options and fields described in the current
#       "FirstWatch Installation and Configuration Manual",  that were
#       not present in earlier manuals, will not work with variables
#       stored in /etc/ha.conf.

# Bourne Shell Syntax:
#
#       The Bourne shell syntax, at times, forces the the user to be
very
#       precise.  Things to watch out for when setting the following
#       parameters:
#
#       - Look at the examples provided for your best source of
information
#       - A comma seperates device entries (see the examples).
#       - If you have more devices, for a specific variable, than
#               will fit on a line use the backslash ("\"):
#               - Don't put a space between a comma and a backslash
#               - There should be no white-space (tabs, space, etc.)
after
#                 a backslash; just the <Carriage-Return>.

#
# PRIMARY_INTERFACES - Network interfaces initialized when
transitioning
#     from IDLE to ONLINE_PRIMARY
#
#     Syntax:
```

```
#           PRIMARY_INTERFACES="device ethernet ip netmask broadcast,
..."
#
#           Note: The broadcast field is optional.
#
#     Example:
#           PRIMARY_INTERFACES="le1 8:0:20:1a:fd:8a 192.9.201.1 \
#           255.255.255.0 192.9.1.255"
#
#     Default: PRIMARY_INTERFACES=""
#
# Edit this line KGD
PRIMARY_INTERFACES="\
qfe0:1 - 10.2.0.63 255.255.0.0 10.2.255.255\
";export PRIMARY_INTERFACES

#
# TAKEOVER_INTERFACES - Network interfaces that stay offline until
#     a takeover is invoked
#
#     See PRIMARY_INTERFACES for more details:
#
#TAKEOVER_INTERFACES="";export TAKEOVER_INTERFACES

#
# PRIMARY_MOUNTS - Filesystems to be mounted and exported when
#     transitioning from IDLE to ONLINE_PRIMARY
#
#     Syntax:
#           PRIMARY_MOUNTS="rawDevice blockDevice mountPoint,\
#                       rawDevice2..."
#
#     Standard UFS example:
#           PRIMARY_MOUNTS="/dev/rsd5a /dev/sd5a /export/disk5"
#
#     ODS Metadevice example:
#           PRIMARY_MOUNTS="/dev/rmd10a /dev/md10a /export/mirror"
#
#     Example of two file systems being exported
#           PRIMARY_MOUNTS="/dev/rsd5g /dev/sd5g /disk5,\
#                       /dev/rsd6g /dev/sd6g /disk6"
#
#     Default: PRIMARY_MOUNTS=""
#
PRIMARY_MOUNTS="\
/dev/vx/rdsk/yoko-dsun1u_DG/informix /dev/vx/dsk/yoko-
dsun1u_DG/informix /opt/informix,\
/dev/vx/rdsk/yoko-dsun1u_DG/mcsrvr /dev/vx/dsk/yoko-dsun1u_DG/mcsrvr
/opt/mcsrvr,\
/dev/vx/rdsk/yoko-dsun1u_DG/apache /dev/vx/dsk/yoko-dsun1u_DG/apache
/opt/apache";\
export PRIMARY_MOUNTS

#
# PRIMARY_MOUNT_OPTIONS - Mount option entries corresponding to
#     PRIMARY_MOUNTS mountPoints.  With this, you may specify mount
#     options (-o) to be performed by the mount(1M) command.  These
```

```
#     are optional.
#
#     While the natural format would be to separate entries with
#     commas(,) these values may contain commas themselves.  Therefore
#     an at(@) will be the character used to separate entries.
#
#     Syntax:
#           PRIMARY_MOUNT_OPTIONS="mountPoint options@mountPoint2...."
#
#     Example:
#
#        If the following PRIMARY_MOUNTS and PRIMARY_MOUNT_OPTIONS
#        were defined:
#
#           PRIMARY_MOUNTS="/dev/rdsk/c1t1d0s6 /dev/dsk/c1t1d0s6
/export,\
#           /dev/rdsk/c1t1d0s0 /dev/dsk/c1t1d0s0 /export2"
#
#           PRIMARY_MOUNT_OPTIONS="/export -o rw,root=usera"
#
#        The mount commands would be executed as:
#
#           mount -f <fstype> -o rw,root=usera /dev/dsk/c1t1d0s6
/export
#           mount -f <fstype> /dev/dsk/c1t1d0s0 /export2
#
#        Since "/export2" was not defined as part of
PRIMARY_MOUNT_OPTIONS,
#        it was mounted with no options.
#
#PRIMARY_MOUNT_OPTIONS="";export PRIMARY_MOUNT_OPTIONS

#
# PRIMARY_SHARE_OPTIONS - Share option entries corresponding to
#     PRIMARY_MOUNTS mountPoints.  With this, you may specify share
#     options (-o) to be performed by the share(1M) command.  These
#     are optional.
#
#     While the natural format would be to separate entries with
#     commas(,) these values may contain commas themselves.  Therefore
#     an at(@) will be the character used to separate entries.
#
#     Syntax:
#           PRIMARY_SHARE_OPTIONS="mountPoint options@mountPoint2...."
#
#           Note: A dash(-) can be used to specify specify not to
#           share the mountPoint.
#
#     Example:
#        If the following PRIMARY_MOUNTS and PRIMARY_SHARE_OPTIONS
#        were defined:
#
#           PRIMARY_MOUNTS="/dev/rdsk/c1t1d0s6 /dev/dsk/c1t1d0s6
/export,\
#           /dev/rdsk/c1t1d0s0 /dev/dsk/c1t1d0s0 /export2"
#
#           PRIMARY_SHARE_OPTIONS="/export -o rw,root=usera"
```

```
#
#        The share commands would be executed as:
#
#           share -o rw,root=usera /export
#           share /export2
#
#        Since "/export2" was not defined as part of
PRIMARY_SHARE_OPTIONS,
#        it was shared with no options.
#
#PRIMARY_SHARE_OPTIONS="";export PRIMARY_SHARE_OPTIONS

#
# TAKEOVER_MOUNTS - Filesystems to be mounted and exported when
#     transitioning from ONLINE_PRIMARY to DUAL_SERVICES for
#     a symmetric server or, TAKEOVER_READY to TAKEOVER for
#     an asymmetric takeover server.
#
#     See PRIMARY_MOUNTS for more details.
#
#TAKEOVER_MOUNTS="";export TAKEOVER_MOUNTS

#
# TAKEOVER_MOUNT_OPTIONS - Mount option entries corresponding to
#     TAKEOVER_MOUNTS mountPoints.  With this, you may specify mount
#     options (-o) to be performed by the mount(1M) command.  These
#     are optional.
#
#     See the PRIMARY_MOUNT_OPTIONS for more details.
#
#TAKEOVER_MOUNT_OPTIONS="";export TAKEOVER_MOUNT_OPTIONS

#
# TAKEOVER_SHARE_OPTIONS - Share option entries corresponding to
#       TAKEOVER_MOUNTS mountPoints.  With this, you may specify share
#       options (-o) to be performed by the share(1M) command.  These
#       are optional.
#
#     See the PRIMARY_SHARE_OPTIONS for more details.
#
#TAKEOVER_SHARE_OPTIONS="";export TAKEOVER_SHARE_OPTIONS

#
# VXVM  - Switch for Volume Manager Support
#
#     Set to 2 to turn on Volume Manager Support
#
#VXVM="";export VXVM

#
# VXVM_DSKGRPS_P - Volume Manager's Disk Groups to import/deport in
#     the startup.script and shutdown.script.
#     The volumes in the disk groups are also started/stopped.
#
#     VXVM is reserved for Future releases.
#
#     Syntax:
```

```
#           VXVM_DSKGRPS_P="DiskGroup1 DiskGroup2\
#                 DiskGroup3..."
#
#     Example of two Disk Groups
#           VXVM_DSKGRPS_P="SupportDG SalesDG"
#
#     Default: VXVM_DSKGRPS_P=""
#
#VXVM_DSKGRPS_P="";export VXVM_DSKGRPS_P;

# VXVM_DSKGRPS_T - Volume Manager's Disk Groups to import/deport in
#     the takeover.script and surrender.script.
#     The volumes in the disk groups are also started/stopped.
#
#     Default: VXVM_DSKGRPS_T=""
#
#     See VXVM_DSKGRPS_P for more details.
#
#VXVM_DSKGRPS_T="";export VXVM_DSKGRPS_T

#
# ODS - Set to 1, 2, 3, or 4 if initializing Online Disksuite
Metadevices
#     Set to the version of DiskSuite you are running.
#
#     Note: Only one of the HA servers should be mounting a shared
#     metadevice at a time.
#
#     See the "ODS Appendix" in the "FirstWatch Installation and
#     Configuration Guide" for more details.
#
#     Default: ODS=0
#
#ODS="";export ODS

#
# ODS_METASETS_P - Solstice DiskSuite metasets to reserve/release in
the
#     startup.script and shutdown.script.
#
#     Syntax:
#           ODS_METASETS_P="HA1 HA2 HA3 ..."
#
#     Default: ODS_METASETS_P=""
#
#ODS_METASETS_P="";export ODS_METASETS_P

#
# ODS_METASETS_T - Solstice DiskSuite metasets to reserve/release in
the
#     takeover.script and surrender.script.
#
#     Syntax:
#           ODS_METASETS_T="HA_A HA_B HA_C ..."
#
#     Default: ODS_METASETS_T=""
#
```

```
#ODS_METASETS_T="";export ODS_METASETS_T

#
# NFS & NUM_NFSD - Set these only if NFS isn't already running (if
there
#     isn't an /etc/fstab or /etc/vfstab file)
#
#       NFS - Set to '1' if starting NFS
#       NUM_NFSD - The number of nfsd daemons to be run - this is used
#           only if 'NFS=1'
#
#     Default: NUM_NFSD=8
#
#
#NFS="";export NFS
NUM_NFSD="16";export NUM_NFSD

#
# NIS_CLIENT - Set this to '1' if you wish the FirstWatch server to run
#     as an NIS (YP) Client with the NIS Master Server located on
#     the service net.  See the "FirstWatch Installation and
#     Configuration Manual" for more details.
#
#     Default: NIS_CLIENT=0
#
#NIS_CLIENT="";export NIS_CLIENT

#
# PRIMARY_ROUTES - Use this to specify routes that should be added
#     to the network routing tables when the FirstWatch server
#     transitions from IDLE to ONLINE_PRIMARY.
#
#     Syntax:
#           PRIMARY_ROUTES="type destination gateway metric, .."
#
#           Where "type" can be:
#                 net
#                 host
#
#           PRIMARY_ROUTES="default destination metric, .."
#
#           See the route(1M) for more information.
#
#     Example:
#        PRIMARY_ROUTES="default goliath 1,net 192.200.0.0
192.203.47.95 3"
#
#PRIMARY_ROUTES="";export PRIMARY_ROUTES

#
# TAKEOVER_ROUTES - Use this to specify routes that should be added to
the
#     network routing tables when the FirstWatch server transitions
from
#     TAKEOVER_READY to TAKEOVER on an asymmetric takeover server, or
#     when a symmetric server transitions from ONLINE_PRIMARY     to
#     DUAL_SERVICES.
```

```
#
#     See PRIMARY_ROUTES for more details.
#
#TAKEOVER_ROUTES="";export TAKEOVER_ROUTES

#
# FORCE_KILL_ON_UNMOUNT - Used only when an initial attempt to unmount
#       a file system fails.  If set to '1', for a file system type
#       (ufs, vxfs), the transition modules will first try to
#       kill all processes active in the file system by first issuing
#       a kill -15 and then a kill -9 before trying a second unmount.
#
FORCE_KILL_ON_UNMOUNT_UFS=0; export FORCE_KILL_ON_UNMOUNT_UFS
FORCE_KILL_ON_UNMOUNT_VXFS=1; export FORCE_KILL_ON_UNMOUNT_VXFS
```

9. pingagent.conf configuration sample file

```
#!/bin/ksh
maxfailcount=4
failoversleep=10
maxnewpingcount=20

goodip=alteon-1
failip=alteon-2

goodif=qfe0
failif=hme0

goodgw=$goodip
failgw=$failip

pingtimeout=5
pingevery=10
logfile=/tmp/pingagentlog

staticroutesto="dino pebbles"

######This initializes the backup port#####
ifconfig hme0 plumb
```

ifconfig hme0 172.16.50.104 netmask 255.255.255.0